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## **Exploring the State of Research on Motivation in Second Language Learning: A Review and a Reliability Generalization Meta-Analysis**

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## **Abstract**

We present a thematic review and analysis of the variables affecting language learning motivation (LLM) (2008-2022). The second-language motivational self-system(L2MSS) model was found to be the most applied construct in measuring LLM. Complex systems theory was also another method gaining prominence in LLM research to explain the interactions between micro- and macro-structures surrounding the learner in influencing motivation. Other factors such as socioeconomic status, dialogism and anagnorisis were also identified as variables relating to LLM. We further conducted a reliability meta-analysis. Our analysis found an average reliability of 0.84 (CI = 0.816 to 0.856), with 34% of reliability coefficients falling below the lower bound of CI. A meta-regression analysis revealed that 16% of the variance in the reliability coefficients was predicted by the number of items in the instruments. Questionnaires with an internal consistency below the lower bound of 0.816 had an average of 4.14 items, while the rest had an average of 5.71 items. We further found significant bias in the papers.

**Keywords:** complex systems; GOSH (graphical display of study heterogeneity) plot; L2 motivational self-system; meta-analysis; motivation; reliability generalization; second language learning; thematic review

## **Exploring the State of Research on Motivation in Second Language Learning: A Review and a Reliability Generalization Meta-Analysis**

### **1 Introduction**

There is increasingly more research to examine the role of positive psychology in second language acquisition (SLA). The scope and focus of this stream of research are vast and varied and include the means by which positive constructs and emotions can enhance the learning process and life in general (Kikuchi and Lake 2021). One of the positive constructs that facilitates language learning is motivation. According to Lamb et al. (2021), motivation is the drive to want something such as a change in personal growth or the attainment of a personal goal. Chapters in Lamb et al.'s (2021) introduction to second language (L2) motivation offer a clear explanation of different aspects of motivation research. This includes the socio-educational model of L2 acquisition, the L2 motivational self-system, self-determination and motivated engagement, complexity theory, emotions, individual differences, and willingness to communicate. In addition, Dörnyei (2022) discussed the historical development of LLM research including different methods for increasing the relevance and compatibility of LLM with research in psychology and education.

In another study, Gardner and Lamber (1972) differentiated integrative and instrumental motivations. Integrative motivation is “a complex of attitudinal, goal-directed, and motivational variables” (Gardner 2001: 1). Integratively motivated L2 learners often have a sense of belonging in the L2 community and its culture and thus are likely to achieve adequate language proficiency. The concept of integrative motivation is commonly examined in the field of education and encompasses constructs such as integrativeness, attitudes towards the learning situation, and motivation (Gardner 2001).

Finally, Dörnyei et al. (2014) introduced the concept of directed motivational current (DMC), which refers to unique periods of increased motivational involvement in pursuing a

goal. According to the DMC theory, an individual's motivational state is sustained through strengthening feedback loops, positive emotionality, and the possibility of reaching a new level of achievement (Dörnyei et al. 2014). DMC originally had three main components: vision, salient facilitative structure, and positive affect. However, a recent systematic review by Jahedizadeh and Al-Hoorie (2021) found that there is scarce evidence supporting these components as necessary conditions of DMC. The authors suggested that DMC experiences may not be the optimal forms of motivation, as they can result in negative emotions and psychological dilemmas for learners such as intense stress, anxiety, depression, sleeplessness, and even panic attacks. Besides these theoretical frameworks, other perspectives such as the L2 motivational self-system (L2MSS) and the complex systems theory of language learning motivation (LLM) have had a significant impact on LLM research.

Despite the various theories of LLM, no thematic review has been conducted to distinguish different areas of LLM research. Moreover, no previous review of LLM has meta-analyzed the reliability of the instruments utilized in the studies. In our study, we focus on examining L2MSS and the complex systems theory of LLM, highlighting their strengths and identifying areas for improvement.

## **2 Motivation in L2 learning**

In recent years, more research has been channeled into what motivates students to learn new languages, why they learn, and how to improve their learning process (e.g., Dörnyei 2014; MacIntyre 2021; Sugita et al. 2017; Villalobos-Buehner 2018; Wang and Liu 2020). This upsurge of research is partly because language learning has continued to be part of students' compulsory curriculum in schools across many countries, especially in Asian countries where besides their first languages, students learn English as an additional language (see Lamb et al. 2021; Muftah and Rafic-Galea 2013; Sugita et al. 2017; Villalobos-Buehner 2018; Wang and

Liu 2020). Although language learning is a familiar subject to students, many find it difficult to continue mastering their second or third languages after their compulsory course ends. In this context, it is puzzling why students' motivation to extend their language skills and knowledge fluctuates over time (Villalobos-Buehner 2018). In recent years, scholars have begun to investigate the connection between motivation and L2 learning in the early 21st century, with a particular focus on the concept of international posture and the related research (e.g., Calafato 2021; Gearing and Roger 2019).

Several meta-analysis studies have been conducted to review the relationship between L2 learning and motivation. Masgoret and Gardner (2003) found that L2 achievement was correlated more with motivation compared to the constructs in Gardner's socioeducational model—integrativeness, attitudes toward learning situations, integrative orientation, and instrumental orientation. The study found no moderating effect of age or availability on the correlations observed. In a more recent meta-analysis, Al-Hoorie (2018) applied Dörnyei's (2005, 2009) L2 motivational self-system to meta-analyze 32 research studies. He found that the three components of the system, namely the ideal L2 self, the ought-to L2 self, and the L2 learning experience, predicted L2 learners' subjective intended effort, but had a weaker impact on the objective measures of achievement. Furthermore, he discovered a strong relationship between the L2 learning experience and learners' effort to learn L2.

Another meta-analysis study was conducted by Mendoza and Phung (2019). The authors applied investigated the theoretical and methodological characteristics of the studies that applied the L2MSS to study learners of languages other than English between 2005 and 2018. They found that L2MSS studies placed a strong emphasis on several neocolonial European languages and Mandarin Chinese, while there was a dearth of research on "learning of regional, immigrant, or indigenous languages" (Mendoza and Phung 2019: 135). Mendoza and Phung further observed a diverse range of methodological practices in L2MSS studies and

the profound impact of L2 classroom environments on language acquisition. Nevertheless, we note a lack of attention given to analyzing the reliability of the measurement tools in all previous meta-analysis reviews.

As already mentioned, two of the widely used theoretical frameworks are Zoltán Dörnyei's L2 motivational self-system (L2MSS) and the complex systems theory of LLM. The L2MSS framework was devised by Dörnyei to analyze learners' motivational trajectories applicable to the 21<sup>st</sup> century context. In this model, Dörnyei (2014) posits that LLM can be divided into three factors: the ideal L2 self, the ought-to self, and the learning experience. The ideal L2 self, which is conceptually related to Gardner's (1985) integrativeness (see Claro 2020), involves imagining a model self (e.g., using a second language in a foreign country) (Wang and Liu 2020).

The ought-to L2 self includes responsibilities that must be fulfilled as a language learner relative to their cultural context (e.g., doing well in English to make their parents proud) (Zheng et al. 2018), and the learning experience encompasses a learner's immediate environment (e.g., teachers, classmates, etc.) and how their interaction with it affects their motivation (Csizér and Kálmán 2019). While L2MSS has been a notable LLM model, the meta-analysis by Al-Hoorie (2018) mentioned earlier reveals that its components only have a modest correlation with language learning. Al-Hoorie proposed that the conditions for the ideal L2 self, such as the availability and vividness of self-guides, should be examined through empirical research. In addition, the predictive power of the ought-to L2 self was found to be even lower than that of the ideal L2 self. Al-Hoorie argued that this component "pertains to someone else's expectations, rather than one's own ideals, and primarily functions in a preventive fashion" (Al-Hoorie 2018: 737). Thus, there is potential for improvement within the L2MSS framework.

Another theoretical framework is complex systems theory, which has been used to unpack and explain the impact of many variables that affect LLM (Gayton 2018; Castro 2018;

Thompson 2017b; Kikuchi 2019). Complex systems theory captures the experience of learners not just from the learner's perspective, but from other active agents and environmental factors surrounding the learning experience, providing a holistic analysis of the course of learning (Castro 2018). Thus, while L2MSS takes a reductionist approach to delineating and measuring LMM by dividing motivation into divisible components, the complex systems theory of LLM provides a bird's-eye-view of the construct intended to capture the emergence and temporal changes in LLM.

### **3 The present study**

Despite the previous endeavors to synthesize the research on L2 motivation, there are two notable limitations. First, to our knowledge, there is no thematic review that examines the factors that distinguish LLM from a broad perspective. A comprehensive review is necessary to categorize the extant publications into thematically distinct lines of research and subsequently evaluate their findings and limitations. Second, previous meta-analysis reviews have overlooked the need to meta-analyze the reliability of the instruments applied in the synthesized studies. In a reliability meta-analysis of L2 measurement tools, Plonsky and Derrick (2016) found that the selection of study instruments significantly affects the reliability of the data. In addition, as Field (2018) noted, low reliability increases the chances of Type I and II errors. To address this gap, we conducted a reliability generalization (RG) analysis, which is a methodology to examine the variability of reliability coefficients and sources of variability for a measurement tool across studies (Miller et al. 2018; Peterson 1994; Vacha-Haase 1998). The results of RG meta-analysis not only reveal the reliability in previous studies applying a given instrument, but also aid future studies in research design (Bornmann et al. 2010).

In addition, conducting an RG meta-analysis would allow us to examine any bias and heterogeneity in published LLM research. Publication bias occurs when studies reporting low reliability, negative results, or small effect sizes have no or little chance of publication (DeVito and Goldacre 2018; see also Rodriguez and Maeda 2006). In LLM research, this could indicate that only studies reporting high reliability statistics are published, while those with low reliability are less likely to be disseminated. Finally, heterogeneity refers to variation in study results (Higgins et al. 2002), which can be due to factors such as diversity in participants' features, instruments used, and languages studied. As the accumulative reliability, publication bias, and heterogeneity of LLM instruments applied in previous research are unknown, it is important and timely to investigate these properties using the RG meta-analysis method.

Thus, in this study, we aimed to identify the research streams, themes, and factors related to LLM through a thematic review, in order to gain a deeper understanding of the underlying constructs of LLM. In addition, we ventured to discuss various theories and themes that nonetheless afford us important perspectives on LLM, although they are not widely researched just yet. The second objective was to synthesize the reliability of the LLM instruments in order to determine the cumulative precision of the LLM instruments and identify any possible variable that may predict variance in reliability coefficients. To achieve the aims of the study, we investigated the following research questions (RQs):

1. What variables and constructs are identified in the research as affecting language learning motivation in second/third language acquisition?
2. What is the reliability generalization of the tools that were used to measure LLM in the studies included in the research?

## **4 Methods**

### **4.1 Dataset**

This study utilized a bottom-up method of gathering and consolidating data before dividing them into research themes. We utilized the database Scopus to identify relevant studies for analysis. Scopus is one of the largest abstract and citation databases of peer-reviewed publications, including journals, books, and conference proceedings (Scopus 2022). When we compared its coverage of LLM to other databases such as the Web of Science (WoS), Linguistics and Language Behavior Abstracts (LLBA), ERIC, MLA International Bibliography, and PsycINFO, we found that Scopus provided the most thorough coverage of LLM research. Therefore, we used Scopus as our main database in this study.

A data query string was created to browse the database through the Advance Document Search function (see Appendix 1). We first limited the search terms to words associated with motivation and language learning/acquisition and focused on the top 23 journals in applied linguistics, as these are the most cited journals in this field according to their Citescorers in Scopus. Terms such as “language learning” or “language learning motivation” were used to identify papers focusing on these relevant themes. Journal names such as “*System*”, “*TESOL Quarterly*”, “*Modern Language Journal*” and so on were used to maximize the relevance of the journals to L2 learning, teaching, and assessment. Furthermore, there was no limit placed on the search for quantitative and qualitative studies, which increases the variety of research data. While qualitative studies provide more personal insight into the learning experience, quantitative studies sample large data to observe general trends in a population. Hence, both quantitative and qualitative studies were extremely important in our full understanding of the scope and depth of the LMM topic. Similarly, no limit was placed on the types of theoretical constructs examined in the studies to broaden our database. Papers published between 2008 and 2022 were used in our analysis, as the L2MSS theory, formulated by Dörnyei in 2005, only included the three components of ideal L2 self, ought-to self, and learning experience in 2009 (see Lin 2020, for a historical account). We did not begin our analysis in 2005, as the theory

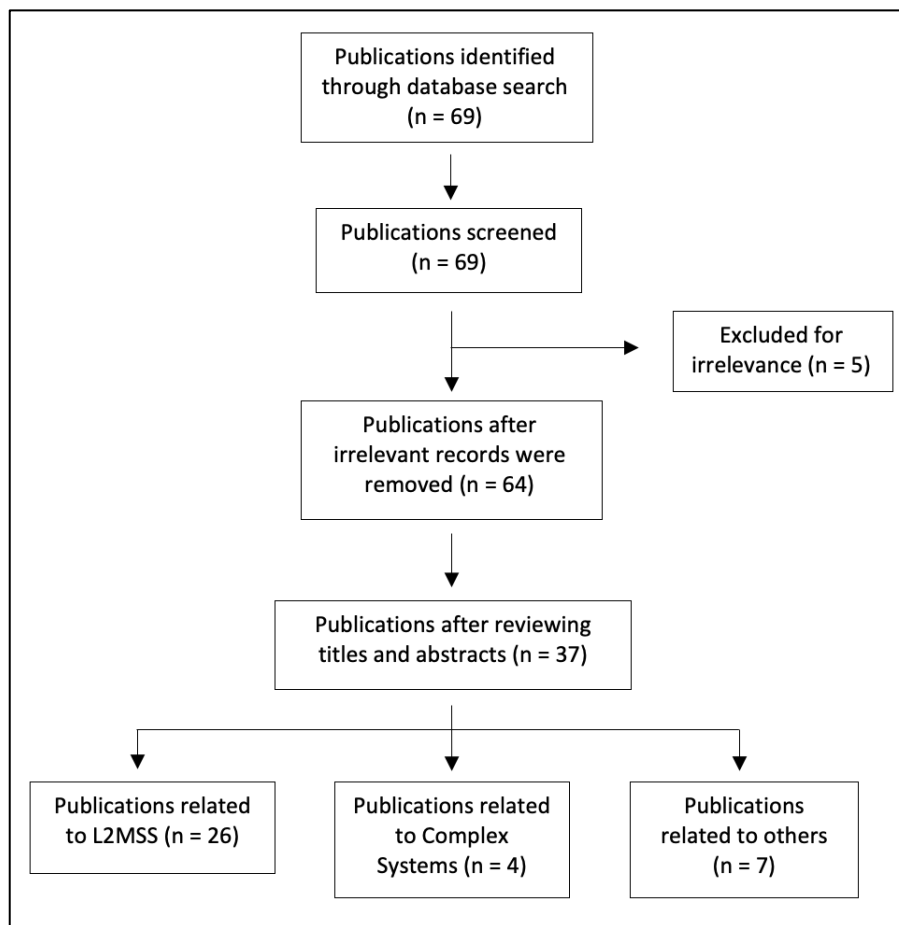
was not fully conceptualized until Dörnyei's publication in 2010. Therefore, we only included papers published after 2008 in order to ensure that we included the most recent and relevant research during this period in our analysis. Limiting papers to a time span would ensure a dataset with results more applicable to the motivational trajectory of the 21<sup>st</sup> century.

As demonstrated in Figure 1, to prevent any potential bias during the filtering and assessing of abstracts and titles of the papers, inclusion and exclusion criteria of the preferred reporting items for systematic reviews and meta-analyses (PRISMA) were employed to ensure transparency in the screening of selected papers (Table 1). This would reduce personal biases and inaccuracies by basing selection criteria on a fixed list and decreasing error and bias during the process. The criteria used to include papers in the study were as follows: (i) papers written in English, as English is the main language used in most peer-reviewed journals; (ii) papers published after 2008; (iii) papers that do not center on integrativeness; (iv) papers focusing on language learners and language learning, as this is what the present study aimed to examine; (v) papers electronically published as articles, as the great majority of published studies were included in databases. Additionally, each title and abstract were read and reviewed twice before a decision was made to include or exclude the publication. Thus, of the initial dataset of 64 papers, 27 papers were excluded, and a final 37 papers were included for the literature review of this paper.

**Table 1:** Inclusion and Exclusion Criteria (PRISMA)

<b>Inclusion</b>	<b>Exclusion</b>
Papers written in English	Papers not written in English
Papers published after 2008	Papers published before 2008
Papers who do not focus on integrativeness theory	Papers who focus on integrativeness theory
Papers focusing on language learners and language learning	Papers not focusing on language learners and language learning
Papers electronically published as articles	Papers not electronically published as articles

**Figure 1:** Visualization of stages of research by Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)



## 4.2 Coding scheme

A coding scheme was created by the researchers before the papers were read at full length. The coding scheme in this study was informed by the previous studies (e.g., Authors, Year; Plonsky and Derrick 2016) and the theoretical frameworks of L2MSS and complex systems theory. Accordingly, the coding scheme consisted of five main categories: (i) study descriptors (i.e., sample size, age group, L2/L3, etc.), which were used to summarize the demographic information of the samples, (ii) summary of the introduction and literature review used to establish the objectives and theoretical framework adopted in each study, (iii) research design to generate information concerning the statistical software or instruments used in data collection, components of the instruments, and the type of study, (iv) results consisting of the

mean, reliability index, and answers to the research questions, and (v) the discussion. Overall, a total of 16 variables were recorded in the final coding scheme. The papers were read, and thorough coding was used to identify repeating and prominent themes as well as significant themes for discussion and interpretation. In addition, we excluded the theory of integrativeness that was proposed by Robert Gardner (Gearing and Rogers 2019) from this study for the reasons presented in Appendix 2.

#### **4.3 Reliability generalization analysis**

To answer the second research question, we coded for the use of Cronbach's alpha in the studies. 10 papers used questionnaires in the dataset ( $n = 64$ ) and reported Cronbach's alpha. From this dataset, we included 8 papers which reported the reliability coefficients, sample size, and the number of items in the questionnaires. The remaining two papers did not provide reliability coefficients, sample size and the number of items in the questionnaires, and were therefore excluded from this analysis. This resulted in the inclusion of 14 questionnaires used in the 8 papers with 45 dimensions that were delineated and operationalized to measure LLM from three perspectives, i.e., L2MSS, complex systems, and other themes.

Next, we used the *Metafor* package in *RStudio* (Viechtbauer 2010), to examine the heterogeneity, bias, and cumulative reliability of the instruments used. Heterogeneity refers to variability and diversity in the published literature and was measured by  $I^2$ , the  $Q$ -test, and the GOSH (graphical display of study heterogeneity) plot (see Appendix 3 for further elaboration). In addition, the GOSH plot (Olkin et al. 2012) was applied to determine whether the model estimates formed a unimodal, contiguous, and symmetric distribution. The GOSH plot can also “identify influential discordant studies or subgroups of studies and can complement typically used methodologies” (Olkin et al. 2012: 215). If subsets are detected in reliability coefficients, post-hoc analysis can be conducted to determine their characteristics.

Publication bias refers to the disproportionate likelihood of publishing the studies that found significant results. We investigated bias by using means of a funnel plot and Egger's regression, as the data had high heterogeneity (Egger et al. 1997). The funnel plot provides a visual representation of the reliability after accounting for the sample size by plotting Cronbach's alpha coefficients against their standard errors. Symmetrical plots indicate a lack of publication bias, while asymmetrical plots show the presence of publication bias—although it should be noted that visual inspections of these plots can be subjective (Borenstein et al. 2013). Therefore, Egger's regression analysis was additionally carried out to compare standardized regression estimates with standard errors. Significant regression models indicate the presence of bias (Egger et al. 1997). Finally, we computed the combined reliability coefficient by aggregating the reliability coefficients of all the studies and visualizing them as a forest plot, wherein the confidence interval of each reliability coefficient was represented by two whiskers and a line of null effect was generated to determine whether any whiskers would overlap it, indicating that the reliability coefficients would not differ significantly from zero. A meta-regression analysis was conducted to investigate the sources of variation in reliability estimates.

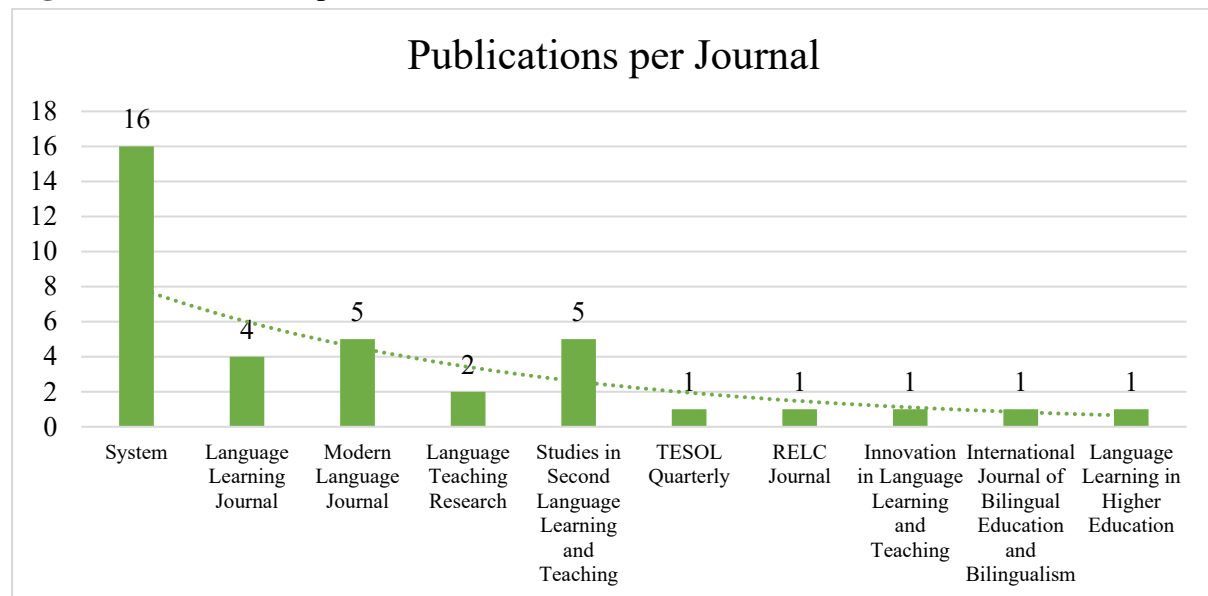
## **5 Results**

### **5.1 Descriptive features of the publications**

From the 64 papers, only 37 papers were included, as the studies removed were not pertinent to L2 learning, motivation, or both. Table 2 presents the distribution of the papers in different journals. Among the journals, *System* and *Language Learning Journal* with 16 and 4 papers, respectively, have published the highest number of LLM research (Figure 2). The studies are from 14 different countries with 17 different L2/L3. Though this review comprised of mostly quantitative studies, qualitative studies had an equal amount of impact on our understanding of

LLM and its effects on learners' motivation trajectories. The methods most used for qualitative assessments are semi-structured interviews together with questionnaires. Longitudinal studies were scarce ( $n = 5$ , Castro 2018; Kikuchi 2019; Pan and Zhang 2021; Wang et. al. 2021; Wang and Liu 2020).

**Figure 2:** Publications per Journal



**Table 2:** Summary of Journals

Journals	Number of Publications	Highly cited researchers	Cited by
<i>System</i>	16	Henry (2009)	65
<i>Language Learning Journal</i>	4	NIL	NIL
<i>Modern Language Journal</i>	5	Thompson and Vásquez (2009)	47
<i>Language Teaching Research</i>	2	NIL	NIL
<i>Studies in Second Language Learning and Teaching</i>	5	NIL	NIL
<i>TESOL Quarterly</i>	1	Guilloteaux and Dörnyei (2008)	206
<i>RELC Journal</i>	1	NIL	NIL
<i>Innovation in Language Learning and Teaching</i>	1	NIL	NIL
<i>International Journal of Bilingual Education and Bilingualism</i>	1	NIL	NIL
<i>Language Learning in Higher Education</i>	1	NIL	NIL

Table 3 summarizes the descriptive features pertinent to the theoretical frameworks. The L2MSS is the most widely used theoretical framework for analyzing motivation in language learning. Most research clustered around East-Asian and Anglophone countries, with few Middle Eastern countries as the main research locations. English was of great focus as a main L2 in L2MSS research (n=16). Research using the complex systems theory focuses mainly on using qualitative methods, with mostly open-ended interviews and no use of questionnaires. However, due to the small sample size of each research, the findings were highly variable. The *Others* section is highly under-represented.

In addition, while the L2MSS research has a longer span from 2008 till present, the other two themes are relatively younger. Commensurate with this wide range, the L2MSS-based studies applied a more diverse array of instruments comprising narratives, questionnaires, language advising sessions, field notes from classroom observation, field notes from advisers' diaries, and interviews. Nevertheless, most questionnaires were designed by the researchers themselves, and there is no common questionnaire being used repeatedly, which makes generalization of the findings across different studies difficult. Similarly, in terms of the L1 of the language learners as well as the L2/L3 under investigation, the L2MSS studies outnumbered the other two groups.

Finally, the studies using L2MSS provided a range of Cronbach's alpha (0.43-0.94), which, on average, are smaller than the studies using 'other' theoretical frameworks (0.71-0.91).

**Table 3** Descriptive Features of the Dataset

Theory	Number of studies		Countries	Instruments used	Sample size	Research Timeline	First language	L2/L3	Reliability coefficient
	Qualitative	Quantitative							
L2MSS	10	16	China, Dubai, Hong Kong, Hungary, Japan, Korea, Chinese Taipei, United Kingdom, United States of America.	Interviews, Questionnaires, Diary entries.	2-1132	2008-2021	Arabic, Cantonese, Chinese, English, Hungarian, Japanese, Korean, Romanian, French	ASL, French, German, Greek, Hindi, Italian, Japanese, Korean, Latin, Portuguese, Russian, Spanish, Urdu, Welsh	Cronbach's alpha = 0.43-0.94
Complex systems theory	3	1	Brazil, Japan, Scotland.	Interviews (semi-structured, long-term and short-term) and questionnaires	1-4	2017-2019	Brazilian Portuguese, English, Japanese	Arabic, Chinese, English	The Cronbach's alpha was not reported.
Others	4	3	China, Chile, Japan, Poland, Russia, United States of America.	Mostly questionnaires	1-740	2013-2021	Chinese, English, Japanese, Polish, Russian, Spanish	English, German, Japanese	Cronbach's alpha = 0.71-0.91

## 5.2 Research streams identified in language learning motivation

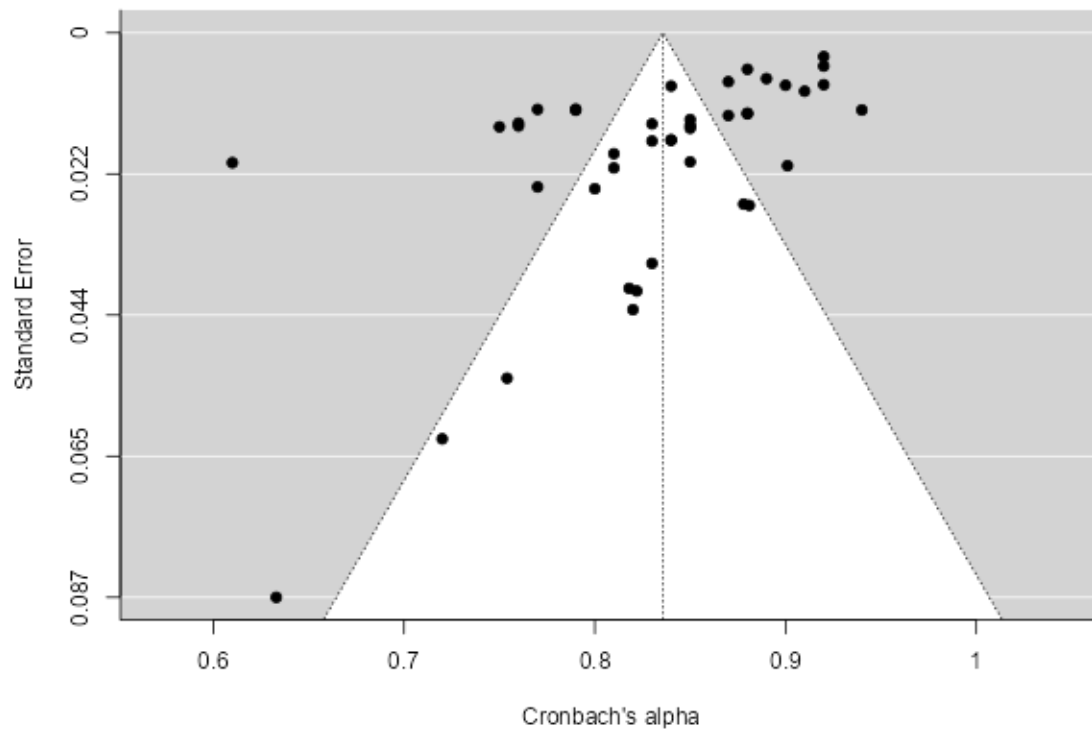
The first research question was intended to investigate the different variables and constructs that affect LLM in second/third language acquisition. After systematic coding, the research stream in the literature of language learning motivation was identified as i) “L2MSS Ideal L2 Selves in Learning English as L2”, ii) “L3 Non-English Learners”, iii) “L2MSS Ought-To L2 Selves”, which included “learning L2: Culture, Career Advancement and Honor” and “Ought-to L2 selves with a prevention focus”, iv) “L2MSS and the Learning Experience”, which comprised “Teachers and Praise”, “Teaching style and student personality”; v) complex systems theory; vi) miscellaneous themes, which included Dialogism, Socioeconomic Status, and Anagnorisis. All these themes would be discussed in full length in the discussion part.

## 5.3 RG results of LLM instruments

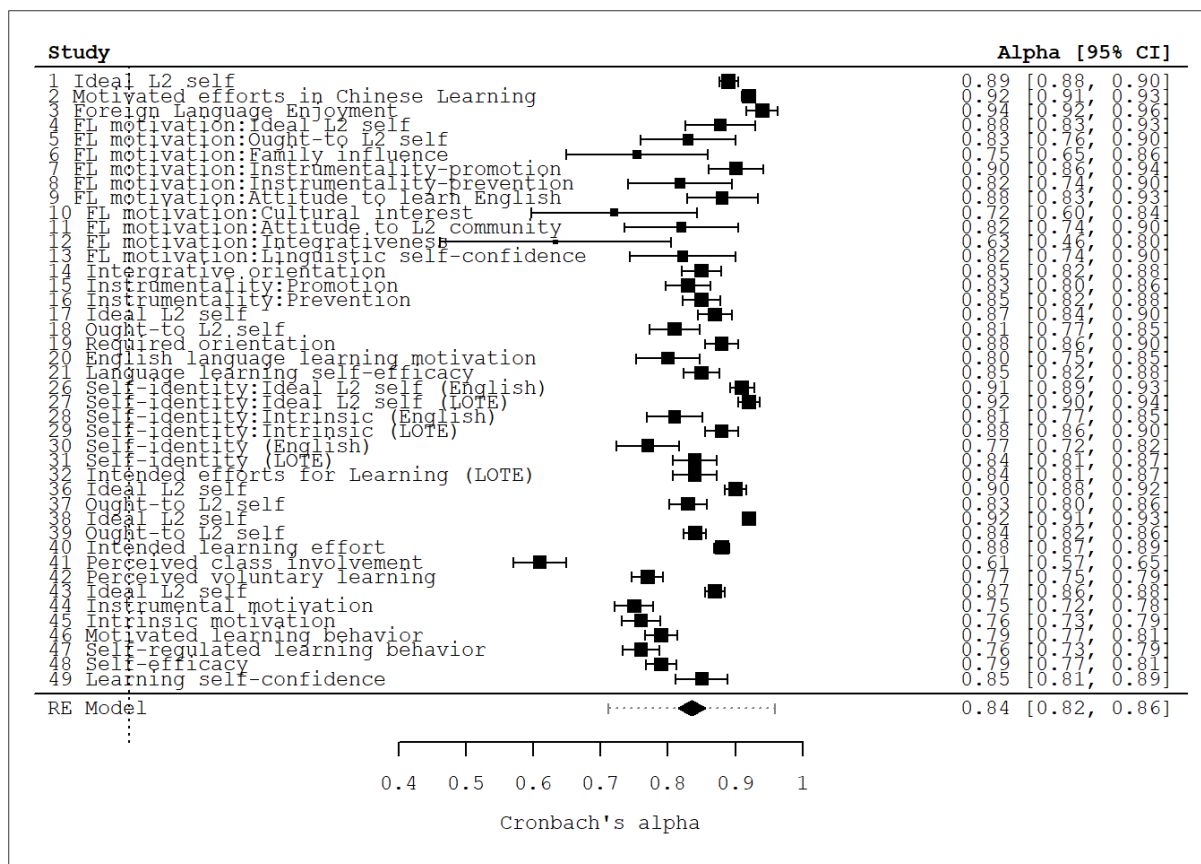
The results of the reliability generalization analysis of 49 Cronbach’s alpha indices showed that there was significant heterogeneity in the published papers on LLM as indicated by the  $I^2$  (96.83%) and the  $Q$ -test (1009.259,  $p < 0.001$ ). A 95% prediction interval for the true outcomes is given by 0.712 to 0.959. Hence, despite heterogeneity in the data, the actual outcomes of the studies are generally in the same direction as the estimated average outcome.

In addition, there was significant publication bias represented in the funnel plot (Figure 3) and the results of the Egger’s regression analysis showed the bias reached statistical significance ( $-3.365$ ,  $p < 0.001$ ). The reliability coefficients were collated and demonstrated in Figure 4. The reliability generalization coefficient, represented as a diamond shape at the bottom of the figure, was  $\hat{\mu} = 0.836$  (95% CI: 0.816 to 0.856), considered to be a substantive value (Field 2018). Nevertheless, 17 (34.69%) out of the 49 reliability coefficients were below the lower bound of the confidence interval (CI) of  $\hat{\mu}$ .

**Figure 3:** Funnel plot of reliability generalization analysis



**Figure 4:** Forest plot of reliability generalization analysis.

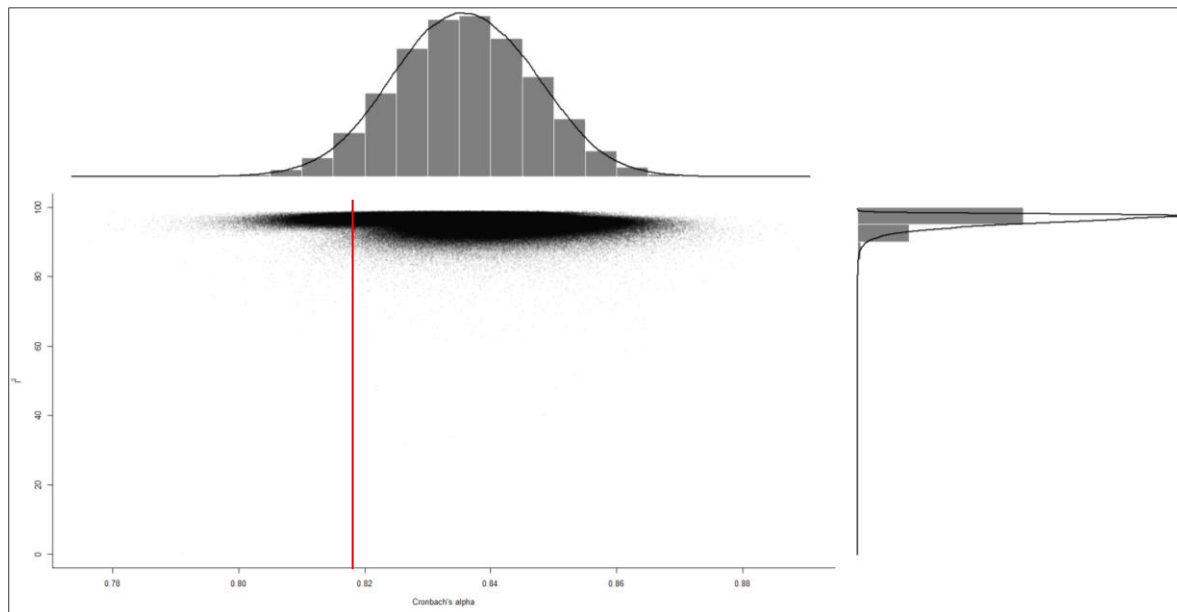


*Note:* Constructs 1 and 2 are from Lai and Tai (2021); 3 to 13 from Pan and Zhang (2021); 14 to 21 from Hennebry-Leung and Xiao (2020); 22 to 25 from Zheng et al. (2018); 26 to 32 from Sugita et al. (2017); 33 to 35 from Thompson and Vásquez (2015); 36 and 37 from Lee and Lo (2017); 38 to 42 from Huang et al. (2015); 43 to 48 from Kormos and Kiddle (2013); and 49 from Weger (2013).

The values of  $Q$ -test and  $I^2$  were larger than 75%, indicating a significant degree of heterogeneity in the RG results. This was further confirmed by the GOSH plot presented in Figure 5. In this plot, the normal distribution at the top of the figure represents an ideal and symmetric distribution, which the dotted graph of the  $I^2$  indices below deviates from. In addition, there are two relatively distinct clusters in the plot, one on the left and the other on the right side of the vertical red line. The cluster on the left side is smaller, while the one on the right is bulky and has a wider spread, indicating that a larger number of instruments with a reliability coefficient greater than 0.81 fall in this cluster. Finally, the vertical histogram on the

right side represents the distribution of the reliability coefficients. The histogram is skewed and shows that the majority of reliability statistics fall roughly above 0.80.

**Figure 5:** The GOSH (graphical display of study heterogeneity) plot of the heterogeneity of the studies.



Next, a meta-regression was conducted to examine the possible causes of variability (heterogeneity) in the reliability of the instruments. We examined the studies to determine which variables could be included in the meta-regression. Two quantifiable variables, i.e., the number of items in the instruments and sample size, were used as independent variables in the meta-regression model. The results showed that the number of items used in the LLM instruments accounted for 16% of the variance in reliability measures ( $R^2 = 0.16$ ,  $F(2, 39) = 3.71$ ,  $p = 0.033$ ). The number of items significantly predicted the reliability of LLM measures ( $\beta = 0.375$ ,  $p = 0.016$ ), indicating instruments with a greater number of items tend to have larger reliability coefficients. Nevertheless, sample size was not found to be a significant predictor ( $p = 0.549$ ).

## 6 Discussion

### 6.1 Research question 1: research streams in language learning motivation

The first research question was intended to investigate the different variables and constructs that affect LLM in the second/third language acquisition. Table 4 provides a summary of the common constructs of L2MSS and the complex systems theory of LLM. while the complex systems theory used a tripartite analysis of the initial condition, attractors, and the phase transition to capture motivation through lengthy descriptive narratives, L2MSS drew on Ideal L2 selves, ought-to L2 selves, and attitude-related variables. However, there were few overlapping constructs in the former group of studies due to the individual differences between each learner.

The findings of the study with respect to the two aforementioned theories of LLM are discussed next.

**Table 4:** Common Constructs Identified for each Theoretical Framework

Theory	Constructs examined	Relevant research
L2MSS	There is little to no common questionnaires and interview questions being used among the researchers, hence it is difficult to clearly identify distinct constructs used. However, there are a few variables that overlap among the research papers. Ideal L2, Ought-to L2 are among the most used variables in questionnaires as they directly measure the two constructs in the L2MSS. Attitude-related variables (i.e., attitudes towards learning English or attitude towards L2 community) and Cultural Interest are also seen to be used by researchers to measure attitude and relevance of L2 community in LLM.	Calafato and Tang (2019); Kikuchi (2019); Sugita et al. (2017); Lee and Lo (2017); Huang et al., (2015); Lai and Tai (2021); Wong (2020); Liu and Thompson (2018); Hennebry-Leung and Xiao (2020);
Complex systems theory	Complex systems theory typically uses a tripartite analysis: the initial condition, the attractor state, and the phase transition. These different paradigms are used to understand extensive narratives about language learning for everyone being interviewed. Due to each narrative being highly personal, different constructs and variables were identified as all the studies are qualitative.	Gayton (2018); Castro (2018); Thompson (2017b); Kikuchi (2019)

#### 6.1.1 L2MSS ideal L2 selves in learning English as L2

One of the key factors mediating motivation, as suggested by Dörnyei (2014), is the Ideal Self (see Table 5). The ideal L2 self refers to an individual's motivation to reduce the discrepancy between oneself and the imagined ideal self that one strives to be (Gearing and Roger 2019). It was predicted that motivational levels will be mediated strongly by the ideal L2 self as learners will have imagined identities (i.e., they see themselves as being fluent in the L2 they are learning) they wish to be or see themselves to be. The ideal L2 self can also be understood as the way a learner may imagine themselves in future positions in life where they must utilize a particular language, hence being an important predictor for LLM.

**Table 5: Summary of the Identified Language Learning Motivation Themes**

Themes under L2MSS Ideal L2 Selves					
Theme	Brief Description	L2/L3	Sample Size	Age group	Citations
English as gateway to career success	<ol style="list-style-type: none"> <li>Many learners take on English as a second language after seeing its importance in future work advancements and access to greater job opportunities.</li> <li>With an increase in use of English in corporate settings, students find themselves engaging in ways to improve their language skills, such as preferring to use English in classroom settings than code-switching.</li> <li>This is related to the Ideal L2 version of themselves as they visualize a successful career advancement with the fluent use of English.</li> </ol>	English, Japanese, French, German, Korean	n = 293 - 1132	University students (actual age not reported)	Zheng et al. (2018); Lee and Lo (2017); Huang et al. (2015)
Non-incentive of Language Other than English (LOTE)	<ol style="list-style-type: none"> <li>Decrease in Ideal L2 self can be influenced by viewing their current L2 as only desirable but not necessary in their future lives.</li> <li>Motivation decreases as a result as students do not deem it necessary to further pursue a language without instrumental benefits.</li> <li>This can be applied to L1 English speaking students as well, where motivation is low as there is no perceived need for any other language.</li> </ol>	German, Korean, Spanish, French	n = 5 - 85	13-64; Wang and Liu (2020) age not reported	Wang and Liu (2020); Gearing and Roger (2019); Lanvers (2012)
Themes for L2MSS Ought-to L2 selves					
Theme	Brief Description	L2/L3	Sample Size	Age group	Citations
Culture, Career Advancement and Honor	<ol style="list-style-type: none"> <li>Definition of success and means of achieving it varies between cultures.</li> <li>Notably, cultures adopting Confucianism teachings place emphasis on career achievements as a way of viewing success and bringing honour to the family.</li> <li>Social pressures transform into Ought-to L2 selves of learners as they seek ways to fulfil this obligation.</li> </ol>	English, Japanese, French, German, Korean	1132	~20.26	Huang et al. 2015
	<ol style="list-style-type: none"> <li>A prevention-focus to the Ought-to L2 self is characterized by avoidance of certain activities to prevent negative results.</li> </ol>				

Ought-to L2 selves with a prevention focus	2. Ought-to L2 self relates strongly to a prevention focus in students (ie. To prevent delay in graduation). 3. Ought-to L2 self relates strongly to a prevention focus in students (ie. To prevent delay in graduation).	German, French, Spanish	10	18-25	Villalobos-Buehner 2018
Themes under L2MSS Learning Experience					
Themes		L2/L3	Sample Size	Age Group	Citations
Teachers and Praises	1. Praises have a positive effect on L2 learning experience, which in turn affects motivations of students. 2. Findings show that negative teaching experience decreases motivation, showing the importance of good teaching practices.	English, French, Spanish, Italian	N = 2 - 22	13-55	Pavelescu (2019); Csizér and Kálmán (2019)
Teaching style and student personality	1. Teachers who constantly encourage their students or who engage in motivational teaching practices positively predict motivations of students. 2. Lesson approach directly affects LLM, however this theme has not been researched extensively yet. 2. Lesson approach directly affects LLM, however this theme has not been researched extensively yet.	English	N = 277-1414	13-44; Hennebry-Leung and Xiao (2020) Age group not reported	Hennebry-Leung and Xiao (2020); Guilloteaux and Dörnyei (2008)
Summary of Other Themes					
Theme		L2/L3	Sample Size	Age group	Citations
Dialogism	1. Bhaktinian dialogism explains that learners construct their sense of self through day-to-day dialogues with others (ie. People who speak their L2/L3). 2. Through realizing the communicative power of the languages, one speaks, one is more motivated to continue pursuing the language where its utterances have a direct impact on one's world.	English, Japanese	N = 1-2	20-28	Lyle 2008; Nakamura 2021; Harvey 2017
Social Economic Status	1. Findings have shown that students from lower SES background tend to have lower LLM than those from higher SES status. 2. Immediate environmental factors (ie. Friends and family) play a big role in affecting their motivational trajectories. 3. Self-efficacy beliefs are also important factors that shape motivation.	English	N = 740	15-16	Kormos and Kiddle 2013
Anagnorisis	1. Anagnorisis is an instant change in attitude towards learning a language. 2. Research has shown that small yet significant instances in life can induce anagnorisis to occur. 3. These incidences (ie. Watching a touching scene in the movies) have significant impact on L2 learning views.	English	N = 5	19-24	Pigott 2019

It was found that English is often regarded as a global language with rich capital value due to its power to increase social mobility and access to job opportunities (Zheng et al. 2018). As such, our review has found that many learners are highly motivated to learn English due to the advantages it offers to their future Ideal L2 selves. In Zheng et al. (2018), the authors investigated the motivational constructs of 293 Chinese participants using questionnaires pertaining to online learning motivations and online self-regulated English learning. Using structural equation modelling (SEM), Zheng et al. (2018) found that students with strong Ideal

L2 selves tend to engage in habits that boost language learning performance, such as engaging in self-evaluations or planning their studies ahead. They also found that the ideal L2 self has a component of “Cultural Interest”, which accounts for variance in variables such as goal setting ( $\beta = 0.35, p < 0.001$ ), time management ( $\beta = 0.27, p < 0.01$ ) and self-evaluation ( $\beta = 0.29, p < 0.01$ ) (Zheng et al. 2018: 150). This can be explained by how students imagine a better future ideal L2 self should they master English (having an instrumental advantage for career success), and hence are more motivated to excel in the language. Cultural interest was also shown to be important in predicting efforts put into learning a language.

Similarly, Lee and Lo (2017) investigated how the preference for classroom language choice is related to LLM (particularly the ideal L2 self) and language proficiency. Through open-ended questions given to students, they found individuals who are motivated to improve their English tend to prefer their teachers speak in English instead of code-switching between L1 and L2 during lessons. A correlational analysis found a positive correlation between ideal L2 self and attitude towards English-only teaching, and was found ( $r = 0.31, p < 0.01$ ) (Lee and Lo 2017: 127). This can be explained by the learners’ goal to use English as a means of communication with people in English-speaking countries, forming the ideal versions of themselves, and hence influencing their choice for using English to communicate even in a classroom setting.

In conformity with Zhang et al. (2018) and Lee and Lo (2017), another study conducted by Huang et al. (2015) also found evidence for Ideal L2 selves as a strong predictor for three motivational variables: intended learning effort, class involvement and voluntary learning. For example, they reported that their participants generally had a very strong foundation for their ideal L2 self, which had a moderate correlation with the motivational variable of intended learning effort towards English ( $r = 0.54, p < .01$ ).

From these studies, we can see the effects of the ideal L2 self on the improvement of learners' English command in the context of career success. The mere imagination of what one can potentially achieve with language success is ample to fuel drive in doing well in a subject. Thus, for applications to the pedagogical domain, teachers should increase students' motivation by giving examples of successful language users so as to provide students with a goal they can potentially aim to achieve.

### **6.1.2 L3 Non-English learners**

Unlike English, learning other languages may not offer the same incentive value and perceived benefits, hence affecting learners' motivation to continue learning a target language. Though learners may have strong Ideal L2 selves at the beginning of their learning journey, their motivation tends to decline as learning the target language is only seen as desirable but not necessary. This conclusion was arrived at by Wang and Liu (2020) who reported a decline in the motivation of Chinese students learning German as a third language (L3). Through interviews, the researchers found a surge in students' motivation to learn German due to their imagination of using and speaking fluent German in their workplace if they were able to master the language. However, factors such as classes being non-compulsory or the notion that German is "less advantageous" in their future lives caused motivation to pale (Wang and Liu 2020). From this finding, we observe the importance of the ideal L2 self, but also that it can be very easily affected by potential instrumental incentives the target language has to offer. Should the target language not benefit students in their future L2 selves, they are less inclined to continue learning them as it is not their priority in the future life they envisioned for themselves.

Another interesting finding in relation to LLM is one from the perspective of foreigners. In a study conducted by Gearing and Roger (2019), English language teachers residing in Korea find no need to learn Korean as an L2 as they saw no need to communicate in the main language

of the country. Proficiency in the Korean language was deemed useless in this globalized world as English is sufficient to help participants get by in their daily and future lives (Gearing and Roger 2019). It is important to recall that Dörnyei's L2MSS ideal L2 self refers to the motivation to close the gap between the current self and future self (Dörnyei 2014). These participants viewed Korean as of lower incentive value compared to the English language they already know, and hence Korean did not form part of their Ideal L2 selves; this is because they could not imagine a future of themselves using the language or wanting to use the language, thus leading to a significant decrease in their motivation.

Similar findings were reported in a study done by Lanvers (2012), where he investigated the LLM of British individuals. This study is different from others, as it is conducted in the context where participants speak English as an L1, so the main de-motivation to learn languages other than English (LOTE) comes from the perspective that they do not see the need to learn any other languages (Lanvers 2012). Participants in this study were students who themselves picked up L2 (i.e., French, German, Spanish, Chinese, Welsh, Irish). Through interviews, they shared their viewpoints on why L2 learning in the UK is at a constant low (Lanvers 2012). Lanvers found that participants saw fluency in L1 English as a huge demotivator for other students to learn LOTE, as they believed no other language is spoken besides English in the UK, as reflected by one of the interviewees who mentioned: "People don't expect you to be able to speak languages when you are British" (Lanvers 2017: 163). As such, their Ideal L2 selves will not involve being able to speak other languages, further contributing to the number of students unwilling to take up an L2. However, Lanvers (2012) also found that awareness of English as a global language increases students' motivation to learn an L2 for the chance to integrate with other minority cultures that cannot speak English, a possible L2 self that can develop through learning a second language. Hence, the importance of the ideal L2 self in mediating LLM is yet again observed in this study.

### 6.1.3 L2MSS ought-to L2 selves

According to Dörnyei (2014), the ought-to L2 self refers to the self that a language learner feels he/she should become as part of an obligation or a necessity. Ought-to L2 selves are usually accompanied by some form of responsibility and social obligation that drives the motive of an individual to reduce or remove negative outcomes, such as achieving bad academic results (Zheng et al. 2018).

**Learning L2: Culture, Career Advancement and Honor.** Success can sometimes be defined by attaining a stable job and earning a good income upon graduation. In societies that follow Confucian teachings, a great deal of emphasis is placed on academic and career success, and to achieve the former is equivalent to fulfilling one's duty towards the family and seen as a social obligation (Huang et al. 2015). Modern day employers look out for graduates not only with working experience, but students who are able to speak target languages beneficial to the company. English is one of such languages that can distinguish oneself from their counterparts when it comes to securing a job. This factor influences language learners' self-guides and motivations to learn languages, as they begin to guide their actions based on societal standards and expectations towards them (Huang et al. 2015).

Despite the significance of cultural influences, we only found one study to address this question. Huang et al. (2015) argued that learners from East Asian cultures experience a strong influence of ought-to L2 selves on their LLM to fit into the social order. According to Huang et al. (2015), in the Taiwanese context, students are often encouraged to be fluent in English and one other language as it is beneficial in attaining jobs in the government section, hence having a strong instrumental incentive to learn an L2 or L3. These societal constructs contributed to the way students define themselves and their obligation towards their family, translating to their own ought-to L2 self-image where they will be accepted and praised for.

Hence, this discrepancy between their current self and selves they ought to become serves as a motivator for language learning in the context of East Asian cultures.

**Ought-to L2 selves with a prevention focus.** Another way of viewing the ought-to L2 self is through Higgin's self-regulatory construct, which is composed of two focuses: promotion-focus and prevention-focus (Villalobos-Buehner 2018). A promotion-focused student will aim to engage in activities or attend classes that help with self-improvement, while a prevention-focused student will avoid activities that might bring them negative consequences such as bad results (Villalobos-Buehner 2018). These are referred to as self-guides. Villalobos-Buehner's (2018) paper focused on investigating what kind of self-guides and possible selves relate to each other and how they work together to regulate novice learners' motivation. Gathering data using open-ended interviews from students taking either German, French or Spanish as L2, one finding of Villalobos-Buehner's (2018) study was that the ought-to L2 self closely relates to a prevention-focused self-guide, where four out of the total ten participants displayed this disposition strongly. One of the participants, Jim, stated that graduating was the only reason he took Spanish class (Villalobos-Buehner 2018). He also expressed seeing value in learning languages, but he did not have the liberty of time to study further as his focus was to finish school on time. Joe, another participant, displayed similar sentiments as Jim, also taking Spanish to fulfill the criterion for graduation. These participants display a strong prevention-focus, where preventing the delay of their graduation drives their motivation to take language classes. Although this finding has yet to be replicated extensively with other cultures and age groups, it is interesting to see a connection between the ought-to L2 self with a prevention-focus instead of a promotion-focus, implying that learning a language as an obligation may not be effective in promoting values of self-growth, but focusing on preventing oneself from falling short on expectations.

#### 6.1.4 L2MSS and the learning experience

The final factor in Dörnyei's L2MSS is the learning experience (see Table 5) which, though being part of the L2MSS framework, is the least studied construct in L2MSS. Yet, a student's learning experience has a significant impact on sustaining motivation, while affecting learning from the sidelines which teachers often ignore. The pedagogical implications of learning experiences can thus potentially improve teaching styles and class delivery and can change the overall learning outcome of students in the long run.

The L2 learning experience, as defined by Dörnyei, "comprises situated, 'executive' motives related to the immediate learning environment and experience (e.g., the impact of the teacher, the curriculum, the peer group or the experience of success)" (Dörnyei and Ushioda 2011: 86). This implies that teachers play an important role in affecting LLM through their classroom deliveries and class planning. Their attitudes towards students and the subject they teach also affect students. We review the findings of four pertinent studies in the sections below.

**Teachers and Praise.** One main finding is the effect of praises and compliments given by teachers on positive experiences in L2 learning. In Pavelescu's study (2019), through two contrasting case studies, one participant, Mika, recalled a pleasant experience where her English teacher showered her with many praises for doing well in her English exam. The feeling of joy and accomplishment resulted in a determined Mika to continue learning English and to do well (Pavelescu 2019). Her eagerness to do well was reflected by her comment during the interview: "I said to myself 'I need to do it. I must do it. I can't stop here'" (Pavelescu 2019: 68). The effect of praise was further enhanced by her second participant Kate, where she recalled having a negative L2 English experience after her middle school teacher called her students insulting terms such as "stupid". This affected Kate's confidence in her English, and she further commented that an absence of encouragement and support from her family and friends halted her motivation to continue studying English as an L2. Csizér and Kálmán (2019)

also had similar findings, where participants reported having positive L2 experiences when their teachers are “generous with praise”, “kind and supportive”, showing that teaching personality leaves an impact on L2 learning experience and possibly motivation (Csizér and Kálmán 2019: 238). Through vicarious experience, teachers’ personality hence impacts their students significantly (Csizér and Kálmán 2019).

**Teaching style and student personality.** Another main finding is the relationship between teaching styles and LLM. Hennebry-Leung and Xiao (2020) conducted a quantitative study by collecting data using a motivation survey, administering a five-factor personality inventory called Children (FFPI-C) and the motivation orientation of language teaching (MOLT) observation schedule to collect data. The researchers found that student personality and teaching styles are significant predictors of LLM, explaining 21% of the variance of the effect of teaching practice on LLM, with encouraging positive retrospective self-evaluation emerging as a significant predictor ( $\beta = .16, p < .05$ ). Similar findings were reported in Guilloteaux and Dörnyei’s (2008) study, wherein they investigated the effect of teaching motivational practices on student learning motivation. They reported a positive correlation between learners’ motivated behaviour and teaching motivational practice ( $r = 0.61, p < 0.001$ ), which explains approximately 37% of the variance in students’ motivation (Guilloteaux and Dörnyei 2008). Once again, this result shows that teaching style and practice directly relate to learning motivation and lesson approach.

### **6.1.5 Complex systems theory**

Complex systems theory is defined as a viewpoint which highlights the “dynamic, complex and emergent nature of motivation” over time (Castro 2018: 140). From this perspective, the learner is perceived as a dynamic social agent embedded within a social system where changes constantly occur. Complex systems can be broken down into three parts: the initial condition,

the attractor state, and the phase transition (Thompson 2017b). The initial condition encompasses the learner's current state. The attractor phase indicates an event that caused the learner to prefer one state over another. The phase transition is a change the learner undertakes when their actions are changed (Thompson 2017b). Using these three phases, the narrative of a learner's learning trajectory can be documented, taking into consideration external and internal influences. Studies using this framework are mostly qualitative and very specialized. Hence, this section will not consist of sub-sections; instead, it will present important key findings through the case studies and highlight the main points in learners' LLM. It should also be noted that these studies also use the L2MSS theory for interpretation, with the focus being placed mainly on individual learning trajectories and unique experiences affecting motivation.

In both Castro's (2018) and Thompson's (2017) investigations, participants showed a pattern of progressing from an initial phase to a new attractor state through external influences that affect their LLM. Lucas, the only participant in Castro's (2018) study, was in a "negative initial condition" in his learning trajectory. His aversion to English was a by-product of his negative experiences in high school, and his only motivation to do well was achieving good grades in school, forming an ought-to L2 self. However, he experienced a phase transition when his family and friends were supportive of his English education, shifting his extrinsic motivation to become an intrinsic one. Learning and excelling in English is now a new attractor state for Lucas, boosting his motivation largely. In Thompson (2017a), the participants, Alex and Rachel, both experienced an anti ought-to L2 self as a new attractor state after their initial condition. The anti ought-to L2 self is a state where a learner defies social norms to pursue an identity less supported by their environment. Alex learnt Chinese as an L2 as part of a required class, forming his ought-to L2 self. However, after his teacher commented he was not good at the subject, he was determined to prove his teacher wrong, fueling his motivation to do well in the subject. His anti ought-to L2 self is hence his new "attractor state", where external stimuli

(i.e., his teacher) fortified his extrinsic motivation to prove to others that he, too, can do well in the subject. Rachel had a slightly different experience from Alex. Her initial condition was being a learner taking French determined to master a “tougher” language, Arabic. Her anti ought-to L2 self is what is keeping her in her new attractor state of learning Arabic, coupled with the shift in political climate, her motivation only grew stronger from an extrinsic to an intrinsic one (Thompson 2017a).

Complex systems theory studies of LLM are largely narrative-based and personalized. However, we see a pattern of extrinsic and intrinsic motivation coming into play as learners shift from initial conditions to attractor states caused by external environmental influences. The above studies illustrate the dynamicity of motivation and the power of external influences on changing the nature of motivation.

#### **6.1.6 Miscellaneous themes**

We further identified certain important factors of LLM in our research, but we were unable to fully classify them into any of the two theoretical frameworks mentioned in the earlier sections. Hence, we have consolidated them under the section of Miscellaneous, but this does not in any way undermine their importance. Due to space constraints, these factors are discussed in Appendix 4.

### **6.2 Research question 2: reliability generalization of LLM instruments**

The reliable assessment of LLM is fundamental in L2 research. In the present study, we conducted an RG meta-analysis to estimate the average reliability of LLM tools in previous research, examine the heterogeneity and bias in the studies reviewed, discover factors that predict the variability among the Cronbach’s alpha indices, and suggest reliability expectations for future LLM research. We identified 49 Cronbach’s alpha indices in previous studies and submitted them to the RG meta-analysis.

It is widely accepted that reliability estimates of data should be at least .70, with a preference for coefficients greater than .80 in educational research (Taber 2018). Our RG meta-analysis examined whether the reliability of LLM data in the literature meets this requirement (Henson and Thompson 2002; Vacha-Haase et al. 2002). The estimated average reliability was found to be 0.84 (CI = 0.816 to 0.856), indicating that, on average, the LLM tools were adequately reliable (Field 2018). The narrow CI also suggests little uncertainty surrounding the computation of Cronbach's alpha coefficients (Núñez-Núñez et al. 2022). Nevertheless, 17 out of the 49 reliability coefficients were below the lower bound of the CI in our RG meta-analysis, which attenuates the internal consistency of multiple LLM instruments employed in previous research. The findings of the meta-regression analysis, which examined the relationship between possible moderating variables and reliability, showed that the number of items in the LLM tools significantly predicted reliability. Accordingly, the observed heterogeneity in the reliability coefficients is partly attributed to the length of the questionnaires employed. Specifically, questionnaires with an internal consistency below the lower CI bound of 0.816 comprised an average of 4.14 items, whereas those with higher consistency had an average of 5.71 items. Overall, this is in alignment with previous RG research showing that reliability tends to be higher for the questionnaires with more items (Núñez-Núñez et al. 2022). We recommend that future researchers consider developing or adapting LLM questionnaires with an adequate number of items. While the average number of 5.71 (rounded up to 6) is not a gold standard, it would be useful to aim for including at least 6 well-designed items in questionnaires in order to maximize the likelihood of achieving a high internal consistency.

## **7 Limitations and future research directions**

Most papers that have been discussed in the sections above are pertaining to learning English as an L2. While English is an important and powerful language in the context of the 21<sup>st</sup> century, our increasingly globalized world has seen the rise in power of another language, Mandarin.

Hence, more research attention should be directed to investigating motivational constructs of students learning the Chinese language, and the increase in its importance should not be shadowed. Another possible future research area can be expanding studies to more second and third-world countries. It is also important to capture the experiences of the less privileged to improve pedagogical practices and approaches, extending educational opportunities and the power of language to those who are in need. As this field of research is still in its budding stages, we are confident that it will continue to progress further, and future findings will improve current practices.

In addition, LLM is a multilevel construct and receives significant influences from 'upper' socioeconomical, environmental, and familial factors. Thus, commonly adhered-to statistical paradigms that do not consider the effect of higher-level factors (such as general linear model) might not be apt to capture the complexity of LLM. We recommend using linear mixed effect models and multilevel SEM to model the various dimensions of LLM for different groups of learners.

## **8 Conclusion**

From this survey of the literature, we observed some patterns of motivation. The ideal L2 self from the L2MSS theoretical framework is of great importance when it comes to explaining motivation among students and language learners. It is a significant predictor of LLM as it is universal and can be applied to people of many cultures and countries despite different learning systems. The ought-to L2 self is slightly different, as the expectations of learners differ from region to region. As from the results above, cultures in East Asia such as Taiwan and China show that many learners are more likely to be pressured constantly to do well in languages to have a stable career and support their family, influenced by the Confucianism teachings and bringing honor to the family.

The L2MSS learning experience has been lightly researched on in the past two decades and only started gaining traction in recent years (Hennebry-Leung and Xiao 2020; Csizér and Kálmán 2019); Pavelescu 2019). Yet, the results of the studies on L2MSS learning experience have important pedagogical implications for education systems. Factors such as teaching style and delivery of lessons affect LLM significantly, as attested by interviews with learners and gaining the perspective from them. It appears that teachers and their relationship with their students affect the psychological aspect of learners, as they promote positive or negative perceptions towards the learning subject depending on the pleasantness of the experience. More research should be done to further improve the teaching and training provided to teachers and plans to increase the efficiency and enjoyment of learning should be implemented in different educational environments.

Studies using complex systems theory as a framework also presented crucial findings and insight into how meso- and micro-systems of a learner's world intersect and shape motivation. The results of studies using complex systems show consistency between the development of motivational patterns between two different sets of participants, moving from the initial stage to an "attractor state" via various influences. These influences can be both internal (i.e., accepting the challenge to learn a "tough" language) or external (i.e., proving a teacher wrong), showing the dynamicity of motivation. However, more research needs to be done regarding complex systems to have a more comprehensive understanding of LLM; hence, this can be a possible area for future qualitative or quantitative research.

The unique findings we have presented in the miscellaneous themes section are one of the most surprising ones. Dialogism and dialogue showed us the power of conversing in forming identity and giving meaning to people's lives. Experiences such as talking to one's colleagues or buying a meal continue to mold and shape the learning experience, influencing motivation. Anagnorisis due to critical incidences is also a very interesting finding as the detailed account

given by participants allows us to understand more about the effects of daily living on motivation. As mentioned before, the focus is being placed on the L2MSS learning experience as well as teaching experience, but daily living is overlooked as part of the process. Good communication with students can aid in understanding why they are learning what they are learning now and will help a teacher better motivate their students by relating to their experiences.

Another finding of the study was that, *inter alia*, while sociocultural factors and perceptions of target language play a significant role in forming learners' motivation to learn additional languages, speakers of English as L1 are generally unmotivated to pick up an additional language. This group of participants does not see the significance of learning any language besides English when they visualize their ideal selves, while they seem to believe that the society has no demand on them to learn other languages besides their L1. While both Asian and non-Asian learners do have imaginations about their ideal L2 selves, East Asian learners tend to be driven by their ought-to L2 selves; notably, they are influenced by societal standards and the demand for career success which is tied to learning an L2, specifically English.

Lastly, SES is also another interesting topic, as it shows the effect of parental education, perspective, and economic capital on LLM. SES has implications for poverty, as education is less prioritized when a family is unable to provide for themselves. This is reflected in the decrease in motivation to go to school, let alone learn a language, as children are pushed to enter the workforce as early as possible. Without the exposure of education and languages, it is difficult to escape the poverty cycle and delve into newer more professional fields with higher earnings. However, as this paper is not entirely focused on SES, the information provided in this paper is limited.

A caveat concerning the synthesis of the results of the previous research is their generalizability. The meta-analysis carried out suggests that while the cumulative reliability of

the published LLM instruments is substantively high and that the studies are heterogenous, there is significant bias in the available publication. While the causes of this bias are not recognizable based on our data, we suggest that the following explanations should be investigated in the future. First, the focus of meta-analysis research is mostly the published research, which prevents the possibility of including unpublished studies, which may have lower than “acceptable” reliability coefficients (e.g., Miller et al. 2018). Second, this study only used the English language studies indexed in Scopus. There are L2 journals that are not indexed in Scopus for various reasons. It would be desirable to extend the scope of the present study by including both unpublished studies and journal publications that are not indexed in Scopus. It is hoped that the results of this review will help future researchers to investigate LLM and relevant constructs in different learning environments around the world.

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## Appendix A The Scopus Search Code

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( SRCTITLE ( "Applied Linguistics" ) ) OR ( SRCTITLE ( "System" ) ) OR ( ( SRCTITLE ( "Studies in second language acquisition" ) OR SRCTITLE ( "TESOL Quarterly" ) OR SRCTITLE ( "Language awareness" ) OR SRCTITLE ( "modern language journal" ) OR SRCTITLE ( "English Language Teaching" ) OR SRCTITLE ( "language learning" ) OR SRCTITLE ( "Language Teaching Research" ) OR SRCTITLE ( "computer assisted language earning" ) OR SRCTITLE ( "ReCALL" ) OR SRCTITLE ( "Journal of Second Language Writing" ) OR SRCTITLE ( "English for Specific Purposes" ) OR SRCTITLE ( "Language Learning and Technology" ) OR SRCTITLE ( "Language Assessment Quarterly" ) OR SRCTITLE ( "Applied Psycholinguistics" ) OR SRCTITLE ( "Language Testing" ) OR SRCTITLE ( "Assessing Writing" ) OR SRCTITLE ( "RELJ Journal" ) ) ) AND TITLE-ABS-KEY ( "Language learning motivation" ) AND ( LIMIT-TO ( SUBJAREA, "SOC" ) OR LIMIT-TO ( SUBJAREA, "ARTS" ) OR LIMIT-TO ( SUBJAREA, "PSYC" ) ) AND ( LIMIT-TO ( EXACTSRCTITLE, "System" ) OR LIMIT-TO ( EXACTSRCTITLE, "Modern Language Journal" ) OR LIMIT-TO ( EXACTSRCTITLE, "Language Learning" ) OR LIMIT-TO ( EXACTSRCTITLE, "Tesol Quarterly" ) OR LIMIT-TO ( EXACTSRCTITLE, "Applied Psycholinguistics" ) OR LIMIT-TO ( EXACTSRCTITLE, "Language Learning Journal" ) OR LIMIT-TO ( EXACTSRCTITLE, "Relc Journal" ) OR LIMIT-TO ( EXACTSRCTITLE, "English For Specific Purposes" ) OR LIMIT-TO ( EXACTSRCTITLE, "Language Testing" ) OR LIMIT-TO ( EXACTSRCTITLE, "English Language Teaching" ) OR LIMIT-TO ( EXACTSRCTITLE, "Studies In Second Language Acquisition" ) OR LIMIT-TO ( EXACTSRCTITLE, "Language Teaching Research" ) OR LIMIT-TO ( EXACTSRCTITLE, "Computer Assisted Language Learning" ) OR LIMIT-TO ( EXACTSRCTITLE, "Recall" ) OR LIMIT-TO ( EXACTSRCTITLE, "Language Learning And Technology" ) OR LIMIT-TO ( EXACTSRCTITLE, "Journal Of Second Language Writing" ) OR LIMIT-TO ( EXACTSRCTITLE, "Second Language Learning And Teaching" ) OR LIMIT-TO ( EXACTSRCTITLE, "Language Awareness" ) OR LIMIT-TO ( EXACTSRCTITLE, "Assessing Writing" ) OR LIMIT-TO ( EXACTSRCTITLE, "Innovation In Language Learning And Teaching" ) OR LIMIT-TO ( EXACTSRCTITLE, "Language Assessment Quarterly" ) OR LIMIT-TO ( EXACTSRCTITLE, "Language Learning And Development" ) OR LIMIT-TO ( EXACTSRCTITLE, "Iranian Journal Of Language Teaching Research" ) OR LIMIT-TO ( EXACTSRCTITLE, "Studies In Second Language Learning And Teaching" ) OR LIMIT-TO ( EXACTSRCTITLE, "International Journal Of Computer Assisted Language Learning And Teaching" ) OR LIMIT-TO ( EXACTSRCTITLE, "Language Learning In Higher Education" ) OR LIMIT-TO ( EXACTSRCTITLE, "Literature And Language Learning In The Efl Classroom" ) OR LIMIT-TO ( EXACTSRCTITLE, "Innovation And Leadership In English Language Teaching" ) OR LIMIT-TO ( EXACTSRCTITLE, "Language Testing In Asia" ) OR EXCLUDE ( EXACTSRCTITLE, "International Journal Of Applied Linguistics And English Literature" ) OR EXCLUDE ( EXACTSRCTITLE, "Indonesian Journal Of Applied Linguistics" ) OR EXCLUDE ( EXACTSRCTITLE, "Chinese Journal Of Applied Linguistics" ) OR EXCLUDE ( EXACTSRCTITLE, "International Journal Of Applied Linguistics Belgium" ) OR EXCLUDE ( EXACTSRCTITLE, "Vigo International Journal Of Applied Linguistics" ) OR EXCLUDE ( EXACTSRCTITLE, "Asian Journal Of Applied Linguistics" ) OR EXCLUDE ( EXACTSRCTITLE, "Eurasian Journal Of Applied Linguistics" ) OR EXCLUDE ( EXACTSRCTITLE, "Applied Linguistics Oxford" ) OR EXCLUDE ( EXACTSRCTITLE, "Iral International Review Of Applied Linguistics In Language Teaching" ) )
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## Appendix 2 Decision on integrativeness

We excluded the theory of integrativeness that was proposed by Robert Gardner (Gearing and Rogers 2019) from this study. Integrativeness refers to L2 learners' motivation to learn a language in order to integrate with the culture of the target language or a target group. Gardner (2001) defines integrativeness as the desire for interaction and "emotional identification with another cultural group" (Gardner 2001: 5) (see Rooy 2006, for a discussion of integrativeness and its dependent constructs). Integrativeness's ability to predict motivation is not conclusive. Some researchers contend that more people are beginning to learn languages in their home countries where they may potentially experience little to no interaction with natives of the L2 they are learning (see Gearing and Rogers 2019). For example, Lin (2020: 112-113) argued that "some concepts in the field of traditional second language motivation, such as integration into the target language population and target

language culture, have already lost their original meaning. That is because English as an Esperanto, doesn't have only one kind of its clear target population anymore, and English is actually regarded as a basic teaching skill in some areas, instead of being attached to a particular culture or community." Other researchers have advanced similar critiques against integrativeness and its fit for the contemporary globalized world. As examining these studies falls outside of the scope of this paper, we suggest Rooy (2006) to the readers, who summarized the critiques as follows: "[t]he main foundations of the criticism of the notion of integrativeness are the simplex views of the identity of second languages learners and the incorrect assumptions made about the sociolinguistic contexts of many learners of English as a second language across the world" (Rooy 2006: 441).

In sum, many languages are used not only in their 'native' countries, but also in various other countries, resulting in integrativeness becoming an oversimplifying theory of LLM, particularly in cultures that are seen as different and challenging to fit into and integrate with (Gearing and Rogers 2019: 127).

### Appendix 3

#### Examination of heterogeneity

$I^2$  is a widely used heterogeneity index in meta-analysis research, with values  $\leq 0.3$  indicating low or unimportant heterogeneity;  $0.3 \leq I^2 \leq 0.6$  representing moderate heterogeneity; and  $0.6 \leq I^2 \leq 1.00$  representing strong or substantial heterogeneity (Higgins and Green 2008). The Q-test follows a chi-square distribution (degrees of freedom = k-1) and provides a formal statistical test with a p value with significant values indicating that the sample of reliability coefficients and publications are heterogeneous (Lipsey and Wilson 2001).

Lipsey, Mark W. & David B. Wilson. 2001. *Practical meta-analysis*. Thousand Oaks, CA: Sage Publications.

### Appendix 4

#### Miscellaneous themes

This section will discuss certain important factors of LLM that were found during our research but we were unable to fully classify them into any of the two theoretical frameworks mentioned in the earlier sections. Hence, we have consolidated them under the section of Miscellaneous, but this does not in any way undermine their importance. In fact, the scarcity of research on these fields and factors is a call for possible future research topics where more work can be done to uncover how these factors affect motivational trajectories in language acquisition. We will present findings on the effect of dialogism, social economic status (SES), and anagnorisis on motivation. **Dialogism.** Dialogism takes its influence from the early works of Russian philosopher Mikhail Bakhtin. Bakhtinian dialogism stresses the importance of the social context of the learner in shaping the learner's identity, and social reality is a by-product of thought, day-to-day conversations, and writings (Lyle 2008). Dialogism hence creates meaning in people's lives and a shared reality is maintained through the assumption that knowledge is not limited to the tenure of an individual, but a collective possession (Lyle 2008). Through dialogue and utterances, learners develop a sense of self through the ability to speak and communicate under the control of shared social responsibilities and expectations (Nakamura 2021). As such, language is an important part of assimilating and adjusting to the social world and expressing oneself. This generates motivation to learn languages, as reflected in Harvey's (2017) research, where he narrates the journey of Dmitry, a Russian male learning English as his L2. Dmitry's English language learning journey is nothing less of an "ideological becoming", where he understood and saw the world through language (Harvey 2017: 72). Dmitry recognized the power English could give him in the professional sector, and this

motivated him to learn the language well as he believed it gave him the chance to “see the world through its [i.e., English’s] eyes” (Harvey 2017: 73). However, after a few occasions of conversing and speaking with his friends from the UK, his motivation took a plunge as he felt that his range of conversational topics did not interest the locals, highlighting the importance of not only language competency, but also understanding cultural slangs to assimilate with its speakers. After realizing his mistake, his motivation saw an increase, as he became determined to speak English well. He would constantly step out of his comfort zone to force himself to speak to locals, understand their social norms, and soon realized the impact his own words had on the world around him and how others viewed him (Harvey 2017). Through the communicative power, he started to “see himself responsible for his own words and as a communicative agent whose utterances have an effect on the world” (Harvey 2017: 75).

Through Harvey’s (2017) work, the importance of dialogue and speeches is realized in forming learner identities, as well as influencing LLM while considering the social context. Though research using this theoretical framework is still scarce, Bakhtinian dialogism provides a different perspective on the power of language and how it subsequently affects motivation as learners navigate their new social world. It is important we continue down this line of research to reap its benefits for pedagogical applications.

**Socioeconomic status.** Socioeconomic status (SES) is another variable found to affect LLM of children and students, with lower SES students showing lower motivation to pursue an L2 compared to those of higher SES. Lower SES is related to ideological beliefs, where the beliefs of parents regarding education and language acquisition may affect children’s motivation for SLA. Kormos and Kiddle’s (2013) quantitative research paper on the effect of SES on LLM of 740 students in a Chilean context showed an overall significant effect of SES and social class on motivational and self-regulatory variables, and autonomous learning behavior. The general effect of social class on the investigated variables was in the medium range and suggests that approximately 11% of the variance in the motivational, self-regulatory and learner autonomy scales can be explained with reference to the social class (Kormos and Kiddle 2013: 405). Post-hoc comparisons performed between the social classes showed that students from the upper and upper-middle classes had higher motivational dispositions than those of the lower, lower-middle, and middle-class students.

From the results above, the authors predicted that the effect of SES on self-efficacy beliefs (i.e., belief that one can be successful in learning a language) is one of the most important factors in LLM, and this sets those from the upper- and upper-middle class students apart from the rest. Influence from parents (partly due to parental educational levels) and their beliefs about language education also inevitably shape the motivations of their children, as more emphasis is placed on schooling and academics (Kormos and Kiddle: 2013). Students from upper classes also have the opportunity to experience good modelling (i.e., better teachers, their own parents, etc.) and develop a stronger ideal L2 self through the course of their education, something students of lower SES might not experience. However, more research needs to be done to expand this investigation to other countries, cultures and certainly other languages apart from English.

**Anagnorisis.** Anagnorisis, an instant change in attitude towards learning a language, is another interesting perspective to take into account when looking at motivation. Pigott’s (2019) study investigating the effects of critical incidences on the motivational trajectory of L2 English learners in Japan, illustrates the significance of small day-to-day events (both positive and negative ones) that affect perspective. Manami, one of the participants, mentioned a memory of a scene from the movie *Titanic*, which she watched during high school, where a family died because they could not read a sign that had instructions in English. Manami since believed that language can help people in need and save lives, making it a pivotal point of her language learning experience (Pigott 2019). Ryota, on the other hand, had a traumatic experience of not

being able to converse in English, and saw himself as a failure. This negative experience motivated him to do well in class to avoid being insulted and ostracized again (Pigott 2019). Through these narratives and interviews, it was shown that day-to-day occurrences can make a significant difference in motivating individuals to take up a language. Factors such as teachers and classroom environment are not the only significant factors affecting motivation; small, unexpected events are sufficient to change a learner's beliefs about language learning.