

Self-efficacy's role within learning a new language during formal education: Systematic review, critical evaluation of past research and paths forward for research and practice

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Abstract

Self-efficacy is essential for persistence in learning across formal education. There are few subjects in formal education that demand more persistence than learning a new language. Researchers have noted this intersection, resulting in a burgeoning body of research examining self-efficacy's role within foreign/second (L2) classroom language learning. The present systematic review of this literature (2006-2023) was undertaken to map the journey that the field of L2 formal education-related self-efficacy research has taken. Three research questions were addressed, each seeking to assess the state of this field and open up new avenues for research. To this end, PRISMA guidelines were followed and SSCI was exclusively employed to set a firm lower end on the quality of research reviewed. A search string was carefully designed and the search period was set between 2006 and 2023, beginning with Mills et al. (2006) which is the wellspring through which much of the research in this area has flowed. The 166 articles reviewed suggest a dependence on relatively weak research design (cross-sectional and exclusively self-report) and a predominance of tertiary education (convenience) sampling. We suggest that a lack of integration and/or comparison with longstanding second language acquisition (SLA) theories prevents substantive headway to be made. There is some hope that the dramatic rise in the number of articles has been paired with better research designs and broad array of theories employed. Researchers within and outside SLA will find the gaps presented by this review a useful guide for developing the field going forward.

Keywords: self-efficacy; research design; review; second language acquisition; foreign language acquisition

1. Introduction

Self-efficacy is the belief that an individual has the ability to be successful in a specific task (Bandura, 1993). Bandura clarified that self-efficacy was also relevant to longer engagements across a series of self-regulated tasks (Bandura, 2012). Bandura and his co-researchers also devoted considerable attention to what he referred to as academic self-efficacy (e.g., Bandura 1993; Zimmerman et al., 1992), that is, the belief that one could be successful in a single or series of academic tasks working towards an established goal.

Academic self-efficacy has long been acknowledged to be a central factor for learning across contexts and domains (Schunk & Pajares, 2002). Academic self-efficacy is a well-established individual difference for learning among a broad range of ages and different competence levels (Hoinicke & Broadbent, 2016). Meta-analysis ($r = .31$, 95% CI [.28, .34]; Richardson et al., 2012), meta-meta-analysis ($d = .92$; Hattie, 2008) and reviews of meta-analysis ($d = .58$;

Schneider & Preckel, 2017) have confirmed self-efficacy as being one of the strongest correlates of academic achievement during formal education.

Research seeking to explain the role of self-efficacy within second/new language learning has been slowly growing during the past two decades. Initial empirical research worked to bridge the gap between the ubiquitous language anxiety research and social cognitive theory's perspective on engagement and achievement. Mills' (2004) thesis and subsequent articles (e.g., Mills et al., 2006) connected language learning anxiety and classroom practice with learners' self-efficacy for native language skills (e.g., reading skill) and mathematics.

Much of the subsequent self-efficacy research in foreign/second language (L2) learning settings following and steadily growing in Mills' wake was an effort to correlate self-efficacy to commonly used "second language acquisition" models/constructs (e.g., Matthews, 2010; Mills et al., 2007). A considerable proportion of this correlative research focused narrowly on language learning strategies (e.g., Nosratinia et al., 2014; Wang et al., 2013). The relationship between self-efficacy and learning strategies was theoretically established by social cognitive theory (Bandura, 1989; Zimmerman, 2000). However, many of the types of learning strategies related to self-efficacy in language learning research were not always discussed by past social cognitive theorists. In some cases, language learning strategies were under-theorized (e.g., Dörnyei, 2014; Takeuchi, 2019), often being disconnected from the broader discussion in educational psychology.

During the most recent 10 years, research regarding the role of self-efficacy within L2 education has dramatically broadened, with the past few years in particular seeing a large growth in the overall number of outputs. The growth has seen theoretically robust connections beyond anxiety, to interest in learning a new language (Fryer et al., 2016) and learner buoyancy during the language learning process (Yang et al., 2022). Along with this growth in research quantity have been anecdotal signs of improving research quality. Longitudinal (e.g., Fryer et al., 2022), person-centered (e.g., Liu & Oga-Baldwin, 2022) and experimental (e.g., Dong et al., 2022) designs have begun to emerge from the field.

There are a few reasons why a critical systematic review of self-efficacy in second/new language learning is now needed. The first reason concerns the essential influence of self-efficacy on learning outcomes both inside and outside formal education. The second reason is that the field has seen a growing body of research examining self-efficacy in second/new language education. This area has recently seen an injection of new research, which has yielded new questions, methods and analyses. The idiosyncratic approach applied by the current self-efficacy research is the third reason, yielding, for example, a. many new instruments measuring self-efficacy in language learning contexts and b. a large amount of language learning strategies and anxiety-related research outputs. A systematic review of where we

have been (and have learned), where we are (currently addressing) and where we might go (boundaries that need to be pushed) is therefore in order.

2. Background

2.1. Social cognitive theory and self-efficacy

2.1.1. Social cognitive theory

Before beginning this review of self-efficacy in foreign language formal education, it is worth taking a step back and tracing its theoretical origins. Like many of our current major theories (e.g., self-determination theory; Deci & Ryan, 1985), social cognitive theory grew partly from a reaction to behaviorism and research typified by Skinner's (1963) program research into the role of environmental triggers and reinforcement as a predictor for behavior. Riding this wave of change, new directions regarding the role of competence seeking within persistent behavior (White, 1957) were also pivotal markers for theoretical development. In this turbulent era of psychological research, Bandura was joined by other eminent psychologists (e.g., Flanders, 1968; Kazdin, 1974; Sherman, 1971) in seeing modeling as central to how humans (as well as animals) learned, or, as was often the focus of the research of the day, could change individuals' behavior. Arising from this field, Bandura advanced his theory, slowly transitioning from modeling learning (1972), to social modeling learning (1976), and from behavioristic ideas of external reinforcement, to self-reinforcement and eventually self-regulation (1977). Integral to self-regulation, self-efficacy was proposed as how individuals translated modeling experiences into future behavior. Bandura (1977) proposed that self-efficacy was supported by four types of social modeling experiences as contributing to an individual's self-efficacy: self (mastery experiences), other (vicarious experiences), and other (persuasive experiences), self (somatic experiences). Bandura proposed that self-efficacy was central to an individual's choice of behavior, as well as the strength and length of said behaviour. Bandura(1978) suggested that self-efficacy's power was accentuated by a reciprocal model (self-efficacy→behavior→outcome→self-efficacy), which could lead to lasting persistence (reciprocal determinism).

2.1.2. Social cognitive theory in classrooms

While a considerable proportion of research related to social cognitive theory was directed towards behavioral change (e.g., phobias; Bandura, 1977), its central focus

on modeling as a means of learning and self-regulation of effort dynamics saw it soon applied to educational settings. Many researchers have used, and a few have contributed to social cognitive theory within education, but Zimmerman's (1989, 2000) and Schunk's (1985, 1989, 1991) contributions permanently stand out. Zimmerman's main contribution was his program of research which played a central role in transitioning Bandura's model of self-regulation (1977) to a model of self-regulated learning (Zimmerman, 1989). Zimmerman's (1989) model of self-regulated learning is one of a few major models of self-regulated learning that are still popular today. It draws on social cognitive theory, while paralleling broader models of goal setting and reflection. Schunk, in addition to his rich and ongoing review research (Schunk, 1985; Schunk et al., 2021), led the field in demonstrating the power of modeling in a wide array of classrooms and domains of study (e.g., Schunk & Hanson, 1989). Other researchers have worked alongside Bandura, expanding and testing models under the broader umbrella of social cognitive theory with important examples being goal setting theory (Locke & Latham, 2019), teacher self-efficacy (Bandura, 1993) and collective self-efficacy (Bandura, 1993; Goddard, et al., 2000).

In addition to the plethora of educational research seated within social cognitive theory, self-efficacy (usually academic self-efficacy) has been included in too many studies to easily count. As a predictor, outcome, mediator or simple covariate, academic self-efficacy is deeply embedded in the educational literature. The more recent growth in interest in self-efficacy can also, at least partly, be attributed to meta-analyses pointing to academic self-efficacy as a major, even central predictor of academic achievement (Hattie, 2008; Richardson et al., 2012).

2.1.3. Pushing the empirical boundaries of self-efficacy in classrooms

The empirical boundaries of self-efficacy in classrooms have remained relatively stable since Bandura's seminal educational review (1993). Most research on self-efficacy has been largely conventional in design, generally using self-efficacy as a part of larger surveys of motivation or self-regulated learning (e.g., MSLQ: Pintrich et al., 1993; PALS: Midgley, et al., 2000). As newer analytical techniques become more common, however, longitudinal research has begun to open new frontiers in our understanding. Latent curve and growth mixture models (e.g., Fryer et al., 2023; Peura et al., 2021) beg questions about how self-efficacy changes across time and how these changes are related to learning outcomes. Mobile technology has also begun to push the empirical boundaries, enabling more effective on-task measurement on a larger scale. This kind of technology allows for micro-analytic designs which address questions central to self-efficacy development such as, for example, cumulative tasks, peer and assessment experiences.

The theoretical boundaries of self-efficacy in classrooms have similarly remained more or less fixed for decades. This is despite theoretical developments in the broader and more directly applicable area of perceived control. Self-efficacy is a part of a family of perceived control constructs (Skinner, 1996), specifically, a capacity belief (Schunk, 1991). Perceived control theory is native to educational psychology, outlining in broad strokes how classroom experiences support (or fail to support) students' perceived control, which is central to students' engagement with learning materials, which in turn drives learning outcomes (i.e., self-system model of motivational development; Skinner & Belmont, 1993). Consistent with Bandura's (1978) model of reciprocal determinism, the self-system model of motivational development (SSDM) contends that learning outcomes reciprocally support perceived control beliefs, setting up a virtuous circle supporting student learning.

Recent contributions to theory have worked to bring these two models together and broaden (beyond social modeling) the theoretical scope of self-efficacy support in classrooms (Fryer & Leenknecht, 2023). Building on self-efficacy as one of many perceived control constructs and the strong parallel between Bandura's model of reciprocal determinism and Skinner's SSDM, self-efficacy was embedded within the SSDM. This organisation enabled connections between powerful classroom experiences such as feedback and teacher clarity – both of which are strong meta-analytic correlates of achievement (Hattie, 2008) – and self-efficacy. More efforts like this, which seek to further explain the role and function of self-efficacy within formal education are essential if we are to capitalize on its well-established contribution to learning.

2.2. Self-efficacy in foreign language formal education classrooms

2.2.1. Potential theoretical contributions

There are a few reasons why social cognitive theory is well suited to L2 learning classrooms. The first is that language learning (both implicit and explicit) is a definitively social experience, wherein modeling is an essential method for teaching and learning (Ellis, 1994). The second is one which any L2 learner can attest to: i.e., the substantial persistence necessary to become competent in a new language. This persistence must be fueled at least in part by an individual's growing self-efficacy for learning and eventually using the language – task by learning task. Some instructional approaches to L2 learning have implicitly capitalized on this task focus (e.g., task-based learning; Ellis et al., 2020), creating natural synergies that should be built upon. Merging task-oriented instructional models and self-efficacy theory together, research could provide fertile ground for studies that meaningfully support classroom language learning.

2.2.2. Actual theoretical contributions

The initial scan of the L2 research literature undertaken prior to engaging in the systematic review suggested that the current literature's focus might be quite narrow and limited: correlating self-efficacy and anxiety; self-efficacy and learning strategies; developing self-efficacy scales for specific aspects of L2, such as writing, speaking, listening, etc. Despite the seemingly obvious potential for social modeling in L2 classrooms, scant research seemed to acknowledge, let alone ask questions in this prominent area of social cognitive theory.

2.3. Researching self-efficacy in foreign language formal education classrooms

For self-efficacy, and, more broadly, social cognitive theory, research to have a substantive impact on L2 classrooms a range of factors must be addressed.

2.3.1. Measurement

The first factor critical to advancing research impact in this area is the measurement of self-efficacy and its covariates. First of all, this means using instruments with clear equivalence to those used in educational psychology research. There is little evidence to support the contention that each skill needs its own specific instrument. Furthermore, the proliferation of instruments with slightly different wording, published in journals which cannot draw upon experts in the field of social cognitive theory, impedes the validity of the research and prevents cross-domain reviews and meta-analyses from providing much-needed direction to researchers. In addition to issues with instruments, there are issues regarding the scope of their measurement. Even a well-established self-efficacy scale is not in a good position to assess students' self-efficacy across months of school experiences and multiple subjects/courses. This type of broad, reflective self-efficacy measurement is a subtle form of injustice to self-efficacy's theoretical foundations.

2.3.2. Research questions, appropriate design and analyses

Research questions addressing the role of self-efficacy as a predictor/mediator of learning outcomes, or as a learning outcome in its own right, need to draw on appropriate theory for direction and justification. If questions are predictive, then appropriate longitudinal designs, which include essential controls, are critical to ensuring

meaningful (i.e., replicable, externally valid) results. Consistent with these needs is the appropriate use of analyses. Structural equation modeling with cross-sectional survey data is an example of how these latter two issues can confound each other, building bodies of research evidence with little connection to reality (i.e., no observed variables) and scant reliability both in the same or in other educational contexts.

2.4. The current systematic review

Decades of evidence have established self-efficacy as a central construct for achievement in formal education (Hattie, 2008; Richardson et al., 2012). The weight of broad meta-analytic findings is buttressed by the theoretical potential of social cognitive theory and self-efficacy to contribute to L2 classroom learning. For this potential to be realized, research efforts in the area need to be organized and critically reviewed both theoretically and empirically. The aim of such a review should be to establish a clear platform for situating self-efficacy in L2 classrooms. The present review will also aim to provide preliminary direction for both where L2 education research needs to go to maximize its impact and how it might get there.

3. Aims

The research questions for this systematic review cover three relatively broad areas:

- RQ1: The first question is methodological and seeks to explain how the field has progressed: How have the field's research methods (research designs, sampling, and analyses) for examining self-efficacy within language learning progressed during the past two decades since Mills' (2004) initial research? By addressing this research question this review will clarify any gaps in research methods in the field and nudge the field away from methods (research designs, sampling and analyses) that might not be meaningfully pushing the field forward.
- RQ2: How have (and/or whether) second/new language learning theories been adapted to employ or integrate self-efficacy into their models?
- RQ3: The third question builds on the second question: what (if any) theoretical contribution has self-efficacy and, more broadly, social cognitive theory made to second/new language learning directly or through existing models and/or constructs? Also, what longstanding models of second/new language learning does self-efficacy align or overlap with and how might these relationships be addressed going forward? Balancing these findings, questions regarding where and how self-efficacy and social cognitive theory might support a better understanding of students' language learning might be addressed.

4. Method

4.1. Procedure

This review aimed to systematically synthesize and critically appraise the existing empirical studies concerning self-efficacy within second/new language learning to provide insights into current methodology and theories applied, as well as identify future research avenues. This review consulted the best practice guidelines of systematic reviews (Cooper, 2016; Siddaway et al., 2019), as well as the Preferred Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (Page et al., 2021). To ensure lucid and impartial reporting, an *a priori* systematic review protocol was registered in Open Science Framework before initiating this review (Fryer et al., 2023). After identifying research questions, a systematic search was conducted in the Web of Science database to identify studies based on inclusion criteria. The procedure of article selection is illustrated in Figure 1.

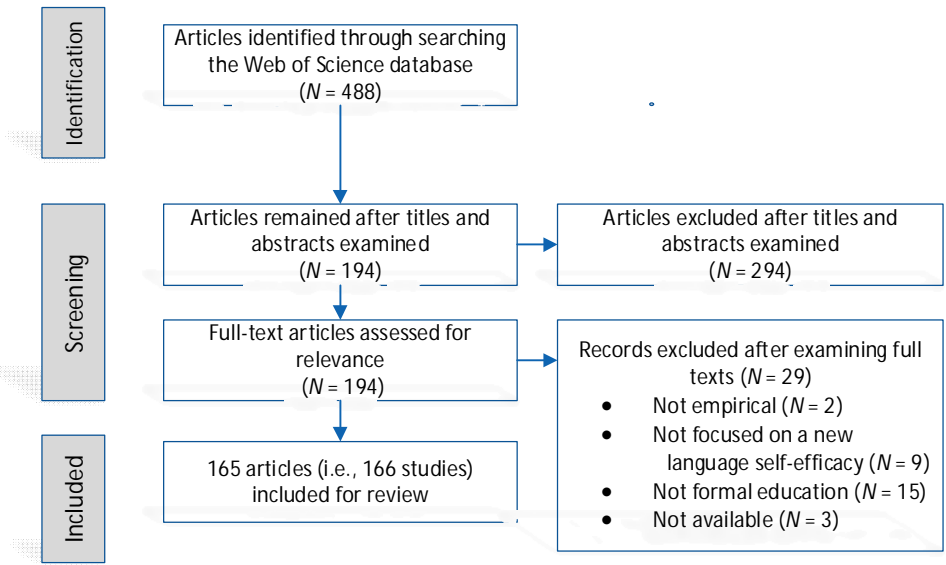


Figure 1 Procedure of article selection

4.2. Inclusion criteria

Inclusion criteria were developed to capture as comprehensive relevant studies as possible and take time practicalities into consideration simultaneously (Kenny et al., 2013). Studies were embraced if they met the following criteria:

1. Studies should be empirical.
2. Studies must be published in reputable peer-reviewed journals indexed by the Web of Science (social science citation index – SSCI).
3. Studies had to focus on learner self-efficacy instead of other populations' self-efficacy (e.g., teacher self-efficacy).
4. Studies needed to focus on self-efficacy for learning a new language (e.g., second language, foreign language). Other kinds of self-efficacy, such as self-efficacy for learning a native language, computer self-efficacy, or creative self-efficacy, were excluded.
5. Participants in included studies should be attending formal education including primary, secondary, and higher education.
6. Studies should be published in English.

4.3. Study search

A systematic search was performed in May 2023 using the Web of Science. The Web of Science database was selected because it is a premier bibliographic database which is deemed among the world's most reliable citation indices platforms for evidence-based quality scientific studies (Clarivate Analytics, 2017; Martín-Martin et al., 2018). In addition to providing reliable sources for this review, constraining the search to WoS (SSCI) should make it easier to replicate and build on these studies' results. This will hopefully support the meta-analyses and synthesis necessary to push this field forward. Based on the above inclusion criteria, a search string was carefully designed: ("new language" OR "second language" OR "foreign language" OR "language classroom" OR "language course" OR "language class") AND ("self-efficacy"). The search scope in the Web of Science included relevant titles, abstracts, keywords or Keywords Plus. The search period was set between 2006 and 2023 because relevant studies primarily started in 2006 (Mills et al., 2006). Also, the search was restricted to SSCI journals.

The preliminary search with the search string yielded 488 articles. The articles identified were imported into reference management software Zotero 6.0.26. Three authors participated in the screening processes. Following the above inclusion criteria, two authors examined the title and abstract of obtained articles separately and excluded irrelevant articles. Afterwards, they skimmed through the full texts of the remaining articles to further ascertain whether these articles satisfied the inclusion criteria. During the screening process, the two authors discussed articles whose eligibility was doubted with the third author until a consensus was reached. After careful selection, a total of 165 articles (i.e., 166 studies because one article contained two studies) were included for further review.

4.4. Data extraction and analysis

Considering the relatively large number of included articles, four authors participated in the data coding processes. All coders were doctoral students with education-related expertise and had research experience conducting review articles. A coding form which aimed to include key information of included articles was carefully designed and all coders were clearly instructed about how to code in adherence to the form (see Appendix). All articles were coded individually by the four coders and all discrepancies were resolved through discussion during the coding process. Data extraction was performed in an Excel spreadsheet.

The coding form included: (1) authors, publication year, titles, and journals; (2) research aims/questions; (3) self-efficacy theories; (4) second/new language learning theories/models; (5) relevant rationales regarding the relationship between self-efficacy and other variables in the second/new language setting; (6) country/region, participants' educational level, target language(s); (7) method (e.g., quantitative/qualitative/mixed-methods, analysis methods); (8) research outcomes. The data obtained were analyzed, summarized, and evaluated regarding frequency, percentages, and themes utilizing content analysis and thematic analysis to address research questions.

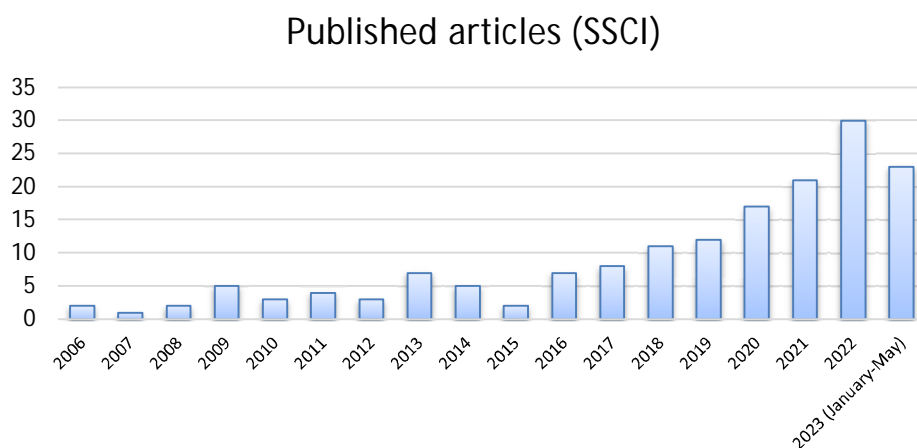


Figure 2 The number of articles included in this review published since 2006

5. Results and discussion

Before addressing the systematic review's questions an overarching quantitative sense of the field's growth is presented in Figure 2. While the popularity of self-efficacy as a research construct within L2 learning presents no clear trend for the first 10 years of this review, the subsequent seven years, suggest a dramatic increase.

5.1. RQ1: How have the field's research methods (research designs, sampling, and analyses) for examining self-efficacy within language learning progressed during the past two decades since Mills' (2004) initial research?

Understanding how the L2 education field has researched self-efficacy's contribution to student learning is crucial to establishing validity and replicability of research evidence to this point. Clarifying where the L2 education field has researched self-efficacy will support ascertaining the external validity of current evidence both internationally and specifically for different levels of education, languages, and national contexts.

Table 1 presents the broad research paradigms (quantitative, qualitative and mixed-methods) and precise research methods employed by research in this area during the past two decades.

Table 1 Research paradigms and research designs

Research paradigms & designs	Number of studies	
	<i>N</i>	%
Quantitative	127	76.51
Qualitative	12	7.23
Mixed-methods	27	16.26
Experimental/observational	<i>N</i>	%
Experimental with a control group	35	21.08
Randomized intervention without a control group	8	4.82
Observational	123	74.10
Cross-sectional/longitudinal/sequential	<i>N</i>	%
Cross-sectional	94	56.63
Longitudinal	50	30.12
Sequential	10	6.02
Qualitative	12	7.23
Variable-/person-centered	<i>N</i>	%
Variable-centered approach	143	86.14
Person-centered approach	5	3.01
Mixed	6	3.61
Not applicable (qualitative studies)	12	7.24

The majority of studies in this area have been quantitative in nature (76%). Given the maturity of the field of social cognitive theory in broader education, and the availability of quantitative instruments for measuring self-efficacy, this partially makes sense. From another perspective, given the relatively recent emergence of self-efficacy within L2 learning (i.e., meaningfully during the past two decades), more qualitative studies seeking to contextualize self-efficacy and social cognitive theory more generally might have been expected.

Research designs were mostly observational (74%), cross-sectional (56%) and variable-centered (86%), with very few applying person-centered (3%) and experimental (21.08%) designs. As will be discussed in more detail, these dominant aspects of research design were in large part the result of many studies using a single survey as their sole research instrument. This type of very simple design has significant limitations with regard to validity and replicability of results, and casts doubt on the reliability and validity of much of the research reviewed.

The reliance of quantitative research in this area on variable-centered approaches to observed data (in contrast to person-centered, mixed-methods or qualitative) is in line with the broader field. At the same time, this strong skew, and particularly the very small percentage of person-centered studies are such areas in the field that call for future investigation.

Table 2 Types of analyses undertaken

Types of analyses undertaken	N	Types of analyses undertaken	N
SEM	18	Common method variance and correlation and path analysis	1
Confirmatory factor analysis (CFA) and SEM	12	Constant comparison method	1
Correlation and regression	10	Content analysis	1
Analysis of covariance (ANCOVA)	8	Correlation and cluster analysis	1
T-test	10	Correlation and regression and CFA	2
Regression	8	Correlation and regression and MANN-Whitney U tests	1
Analysis of variance (ANOVA)	10	Correlation and regression and MANOVA and ANOVA	1
CFA	6	Correlation and t-test	2
Correlation	5	Descriptive analysis and ANOVA and grounded theory method	1
Qualitative (no approach specified)	5	Descriptive and qualitative (no approach specified)	1
Thematic analysis	5	Descriptive and thematic analysis	1
Multivariate analysis of variance (MANOVA)	4	EFA and CFA	1
ANCOVA and MANOVA	2	EFA and CFA and SEM	2
CFA and regression	3	EFA and regression	1
Latent growth analysis	2	Frequency analysis and content analysis	1
ANCOVA and Mann-Whitney U test	1	Latent profile analysis and ANOVA	1
ANCOVA and qualitative (no approach specified)	1	MANOVA and correlation and thematic analysis	1
ANCOVA and regression	2	MANOVA and path analysis	1
ANCOVA and regression and path analysis and content analysis	1	Principal components analysis and t-tests and correlation and content analysis	1
ANOVA and correlation	2	Qualitative analysis of narratives	1
ANOVA and correlation and CFA and conditional process modeling	1	RASCH analysis and principal component analysis and correlation	1
ANOVA and correlation and regression and Fisher z-r test and cluster analysis	1	RASCH and correlation and regression	1
ANOVA and generalized estimating equations	1	T-test and ANOVA and correlation and regression	1
ANOVA and latent profile analysis	1	T-test and correlation and CFA and SEM	1
ANOVA and regression and CFA	1	T-test and regression	1
CFA and correlation and MANOVA and SEM	1	T-tests and ANCOVA and thematic analysis	1
CFA and EFA and Kruskal-Wallis test and Mann-Whitney tests	1	T-tests and factor analysis and correlation	1
CFA and latent profile analysis	1	The rating scale model	1
CFA and latent profile analysis and latent profile transition analysis	1	Thematic analysis and ANOVA and path analysis	1
CFA and MANOVAs and SEM	3	Thematic analysis and correlation	1
CFA and t-test	1	Thematic analysis and t-test	1
Cluster analysis and MANOVA	1	Wilcoxon signed-ranks test and MANN-Whitney U tests	1
Cluster analysis and regression	1	Wilcoxon signed-ranks test and content analysis	1

Narrowing the focus, Table 2 presents precisely what kinds of analysis were undertaken in each article reviewed. Amplifying the high percentage of cross-sectional,

single-instrument research designs presented above is the large number of structural equation modeling (SEM) analyses undertaken (19%) and zooming out, general predictive approaches to modeling data (i.e., including regression 39%). For predictive analyses, longitudinal data are preferred (i.e., cross-lagged data collection), but rare in the observed studies reviewed. SEM in particular is often seen as a popular and increasingly easy analytical tool for turning survey data into models and published results. For such analysis to contribute to our understanding of self-efficacy within L2 learning classrooms, however, they must be a part of the sophisticated studies which should include longitudinal data collection, for key outcome variables.

Table 3 Sample country/region, sample education level and target language

Country/Region	Number of studies	
	<i>N</i>	%
Mainland China	50	30.12
Taiwan	15	9.04
Hong Kong	11	6.63
Japan	10	6.02
South Korea	10	6.02
UK	9	5.42
USA	9	5.42
Iran	8	4.82
Spain	4	2.41
Turkey	4	2.41
Canada, Chile, Germany, Malaysia, Norway, Vietnam (each = 2)	12	7.23
Other 16 countries/regions (each = 1)	16	9.64
Include more than one country/region	2	1.20
NA	6	3.62
<i>Educational level</i>	<i>N</i>	%
Tertiary education	114	68.67
Secondary education	34	20.48
Primary education	16	9.64
Include more than one educational level	2	1.21
<i>Target language</i>	<i>N</i>	%
English	143	86.14
French	9	5.42
Chinese	5	3.01
Spanish	3	1.81
German	1	0.60
Turkish	1	0.60
Include more than one target language	4	2.42

Table 3 presents the context (country/region and level of education) and target languages for the research reviewed. The overwhelming focus on English as a target language for research (86.14%) is consistent with the Asian education/research contexts (Mainland China, Taiwan, Hong Kong, Japan and Korea) which dominate in the area of L2 self-efficacy research (57.83%). The dominance

of tertiary education (68.67%) is of greater concern, given the fact that it is unlikely that the vast majority of L2 education is taking place at this level. It seems likely that this imbalance is much due to convenience of data collection for researchers. Clearly, a more balanced approach to research in this area is important for meaningful and sustainable contributions to be made in the future.

5.2. RQ2: How have (and/or whether) second/new language learning theories been adapted to employ or integrate self-efficacy into their models?

The first step towards addressing this question is to understand how self-efficacy has been used, that is, self-efficacy for what? Table 4 presents 24 types of self-efficacy research in the articles reviewed. A large proportion of the research in this area is broadly on self-efficacy for language learning. This generalized approach to measuring self-efficacy runs a few risks. First, it might not be entirely clear to students answering the surveys what they are expected to rate themselves on. An additional issue is the distance of self-efficacy from its target. Bandura (1977, 2012) has been clear that it is possible to measure self-efficacy at many levels (from very specific to more general), but the further away self-efficacy is from its target, the less powerful it is likely to be in explaining behavior. Despite these concerns, it is heartening to also see self-efficacy being applied to a wide variety of language skills and tasks. Several specific self-reported instruments have been created to measure students' self-efficacy for L2 skills, such as, for example, writing, speaking and reading. The inclusion of other skills/tasks such as translation, oral presentation and online learning suggests that self-efficacy has, and can further be applied to a broad spectrum of language learning experiences.

Table 4 Self-efficacy types

Self-efficacy types	Number of studies	Self-efficacy types	Number of studies
Self-efficacy in English language learning	77	Self-efficacy in Spanish language learning	2
Self-efficacy in English writing	34	Self-efficacy in Chinese language learning	1
Self-efficacy in English reading	7	Self-efficacy in Chinese speaking	3
Self-efficacy in English speaking	6	Self-efficacy in German language learning	1
Self-efficacy in English listening	5	Self-efficacy in Turkish writing	1
Self-efficacy in English listening and speaking	2	Self-efficacy in English and Japanese language learning	1
Self-efficacy in English listening and reading	3	Self-efficacy in French and Spanish language learning	1
Self-efficacy in English translation	2	Self-efficacy in Italian and Spanish language learning	1
Self-efficacy in English vocabulary	1	Self-efficacy in different languages learning	1
Self-efficacy in English vocabulary and reading	1	Self-efficacy in English course	1
Self-efficacy in English oral presentation	1	Self-efficacy in Chinese course	1
Self-efficacy in French language learning	7	Self-efficacy in Spanish course	1
Self-efficacy in French reading	1	Self-efficacy in English tasks	2
Self-efficacy in French listening and reading	1	Self-efficacy for self-regulated in online English learning	1

A further step towards answering our questions regarding self-efficacy's role within L2 models/modeling is addressed by reviewing how self-efficacy has been applied in analyses. As presented in Table 5, the salient use of self-efficacy as a correlational variable with other constructs (52%) corroborates with the previous findings that most studies are cross-sectional. The use of self-efficacy as a research outcome that L2 researchers value for its own sake is in contrast to Bandura's (1977) positioning of self-efficacy as a critical self-regulating process driving the choice of, length and strength of behavior. This is in part consistent with the use of self-efficacy in L2 research: a predictor. Arguably, Bandura's (1978) model of reciprocal determinism would situate self-efficacy chiefly as a mediating variable, bridging social experiences and persistent behavior towards goals. The salient use of cross-sectional research designs is a concern as correlational designs provide limited insights into the relations between self-efficacy and other constructs. In fact, a large number of cross-sectional datasets were employed to construct and test structural equation models. This type of analytical approach with cross-sectional data is well known to often yield unreliable results. If the field is to progress, research designs need to improve and the selection of analytical approaches needs to be more conservative: cross-sectional designs must be matched with cross-sectional analyses, that is, understanding relationships (correlation), rather than prediction (regression). The case for when to use cross-sectional designs and how to use them effectively has been made previously, and is worth reading (e.g., Spector, 2019; Wang & Cheng, 2020).

Table 5 Self-efficacy use in analyses

Self-efficacy research use	Number of studies	%
Correlational	89	52
Outcome	39	23
Predicting variable	16	9
Qualitative	15	9
Descriptive	5	3
Validation of self-efficacy instrument	4	2
Person-centered	2	1
Mediator	1	<1
Moderator	1	<1

Given self-efficacy's relatively recent emergence within the L2 learning literature, it is important to review how it is being theoretically framed in publications. As shown in Table 6, of the 166 studies reviewed, a meaningful proportion (18%) failed to provide any definition or citation for self-efficacy. Instead, articles just added self-efficacy while commonly referring to it to as a source of motivation. A significant proportion of the reviewed articles (64%) did, however, define and cite

self-efficacy in direct alignment with Bandura's research. By failing to theoretically frame self-efficacy correctly, many researchers and their readers are less likely to grasp precisely what self-efficacy is contributing to. This makes it more challenging to develop the field's understanding of self-efficacy and potentially find ways of meaningfully incorporating self-efficacy into L2 teaching and learning practice.

Table 6 Self-efficacy theoretical framing

Self-efficacy theoretical framing	Number of studies
Cited Bandura's (1977) self-efficacy definition	94
Cited social cognitive theory	11
Cited Pajares' (1986) self-efficacy definition	7
Cited other definitions of self-efficacy (e.g., Schunk, 1985; Zimmerman, 2000)	6
Cited expectancy value theory	4
Cited goal setting theory	2
Defined writing self-efficacy	3
Defined listening self-efficacy	2
Defined reading self-efficacy	2
Cited master approach goal	1
Cited theory of planned behavior	1
No clear definition for self-efficacy	33

One final perspective the current review provides regarding RQ2 is how L2 research makes use of self-efficacy; specifically, how the reviewed studies' research questions position self-efficacy (as predicting, correlating and mediating with what?). Table 7 presents an extensive list of self-efficacy roles within the reviewed research, that is, generally what it is expected to predict or be predicted by. The most common question is how achievement will predict or be predicted by self-efficacy (6%), followed closely by some aspects of self-regulated learning (5%) and technology use (5%). Connections to achievement were to be expected, given that self-efficacy has been demonstrated to be a strong predictor of achievement. Similarly, there is a long tradition of theorizing and research in the areas of self-regulation (e.g., Cumming, 1989; Labarca & Khanji, 1986) and self-regulated learning (e.g., Batya et al., 1993; Oxford et al., 1990) to be adapted to L2 contexts. Anxiety has both a broad tradition of research with self-efficacy, and as a specific question related to language learning to draw upon. Online learning (i.e., technology use) is an active context for research across all domains of education, with self-efficacy seen as an important predictor and outcome. There were a few studies focusing on specific areas of L2 learning (writing skills, reading performance) suggesting small inroads into class practice in this domain. There are far fewer studies seeking linkages between self-efficacy and applied linguistics models, such as L2 selves (Higgins, 2011) or willingness to communicate (MacIntyre, 2007). More effort at comparing, and potentially theoretical integration, with

applied linguistics models of learning is therefore still a significant gap in the field. Without such studies, self-efficacy, and by extension social cognitive theory, is likely to remain at the edges of L2 research and practice.

Table 7 Research question focus related to self-efficacy

Research question focus related to self-efficacy	N	Research question focus related to self-efficacy	N
Achievement	10	Goals and attitudes	1
Self-regulated learning (SRL)	9	Hierarchical complexity of self-efficacy	1
Technology use	9	Ideal L2 self	1
Instruction	7	Instruction and anxiety	1
Feedback	6	Instruction and strategy use	1
Anxiety	6	Instruction and vocabulary knowledge	1
Motivation	5	Intention	1
Measurement (self-efficacy)	3	Intention and achievement	1
Reading performance	3	Interest and course proficiency	1
SRL and writing performance	3	Interest and engagement	1
Gender	2	Intrinsic cognitive load	1
Interest	2	L2 class comprehension and engagement and achievement	1
Metacognition	2	Language learning experience	1
Sources of self-efficacy	2	Language learning experience and achievement	1
Speech performance	2	Learning adaptability and anxiety and achievement	1
SRL and achievement	2	Learning climate	1
Writing performance	2	Learning performance and cognitive load	1
Writing performance and anxiety	2	Learning strategy	1
Willingness to communicate	2	Metacognition and listening performance	1
Self-concept	2	Motivation and language learning experience and achievement	1
Achievement and motivation	2	Motivation and SRL	1
Achievement and cognitive load	1	Motivation and task value	1
Achievement and emotion	1	Motivation and task value and control of learning	1
Achievement and gender differences	1	Motivation and writing performance	1
Achievement and regional differences	1	Neuroticism	1
Achievement and task-based self-effort and motivation	1	Parent-child communication and engagement and learning adaptability	1
Anxiety and achievement	1	Perceived communication competence and anxiety and willingness to communicate	1
Anxiety and cognitive load and learning behavior	1	Feedback and goal	1
Anxiety and L2 autonomy	1	Positive L2 model	1
Anxiety and learner interactions	1	Positive psychology	1
Anxiety and motivation	1	Previous teaching experience and prior academic oral presentation experiences	1
Attribution and achievement	1	Project-based learning (PBL)	1
Attribution and master/performance goal	1	Psychological needs	1
Attribution and self-concept	1	Self-assessment accuracy	1
Badge mechanism and learning performance	1	Self-assessment and language awareness	1
Belief system	1	Social class	1
Blended learning mode and practice community using intelligent cloud teaching	1	Social persuasion	1
Control strategy use and motivation	1	Strategy use	1
Data-driven learning	1	Strategy use and achievement	1
Decoding ability and motivation	1	Strategy use and reading performance	1
Emotion and strategy use and gender	1	Strategy use and vocabulary knowledge and motivation	1
Emotions	1	Task complexity and prior knowledge and strategy use	1
Emotions and motivation and achievement	1	Task complexity	1
Engagement	1	Task value and strategy use	1
Engagement and achievement	1	Task value and strategy use and achievement	1
English public speaking performance	1	Teacher-student relationship	1
Flipped class	1	Technology use and achievement	1
Sources of self-efficacy and achievement and gender and regional differences	1	Tutoring	1
Future expectancy	1	Willingness to communicate and language learning experience	1
Gender and motivation and language literacy	1	Writing performance and anxiety and motivation	1
Goals and learning strategy and achievement	1	Writing performance and SRL and technology use	1
Goals	1	Writing performance and strategy use	1

5.3. RQ3: What (if any) theoretical contribution has self-efficacy and, more broadly, social cognitive theory made to second/new language learning directly or through existing models and/or constructs?

This final question is addressed by reflecting on the results presented to this point. For several reasons, the present review's findings suggest that, despite being included in many studies examining L2 education ($k = 166$, 2006-2023, SSCI), self-efficacy has made only a very limited contribution to the field. The first barrier to meaningfully contributing to L2 learning (theory and eventual practice) is the failure to clearly define and theoretically situate self-efficacy. Self-efficacy is one of several ability belief constructs or types of perceived control (Skinner, 1996). It is a very specific pairing of capacity and expectancy beliefs. Furthermore, its function is not just as a predictor of SRL, anxiety or achievement. Bandura (1978) conceived of self-efficacy as part of a self-regulating (different from SRL) process and critical to a reciprocal model for explaining how learning experiences can feed into persistent behavior. By failing to theoretically situate self-efficacy, researchers miss out on much of what it has to offer.

The two other prominent issues that prevent much of the research reviewed from substantively contributing to L2 theory are research design and analysis. While cross-sectional research is not entirely without merit, it is generally an ineffective means of explaining complex developmental processes like language learning. This reality coupled with the reviewed research's overreliance on surveys as central or sole research instruments raises concerns about the validity of the field at this stage. This situation is only exacerbated by many researchers' insistence on using predictive analytical tools (multiple regression, path analysis or latent SEM) with either cross-sectional data or sequential data with a lack of controls for dependent variables. Cross-lagged designs are a critical foundation for these types of analyses; observational designs that have predictive questions should move in this direction to increase the quality of their contribution to our understanding of self-efficacy's role within L2 classrooms.

6. Limitations and future directions

This review drew exclusively on journals from the Social Science Citation Index. As a result, some relevant articles might not have been reviewed. Future reviews in this area might consider broadening the search. This review was also constrained by its research questions which focused on the quality of the literature and its potential contribution to the literature addressing L2 learning in formal education. Again, a broader set of questions might be in a strong position to add to this review's conclusions.

This review has identified several weaknesses in the application of self-efficacy to L2 learning research. This opens the field up to new research in several ways. First, the time is right for this area of L2 learning to improve its research designs: (a) using longitudinal designs for longitudinal questions, (b) standard use of important controls such as gender and prior achievement, and (c) employing valid research instruments. Building directly on these points is the appropriate use of structural equation modeling and more generally all aspects of regression. These are predictive analyses which assume that the dependent variable can be predicted (theoretically and empirically). Other subfields of education have already corrected this analytical gap and hence it is time for applied linguistics to follow suit. As noted in the discussion, for self-efficacy to find a permanent place in L2 research and classrooms, integrative (with applied linguistics theories) and comparative (with applied linguistics constructs) research is essential.

A final suggestion for future research in the specific application of self-efficacy – and applied linguistics more broadly – is that if researchers intend to use variables from educational psychology, they will, at least partially, build on educational psychology research findings. Language learning classrooms have much in common with other formal classrooms (see Fryer & Oga-Baldwin, 2019). Language learning still has much it could learn from other areas of education. By simply transplanting constructs and leaving their theoretical and empirical research history behind, language learning research often fails to reap the full benefits of research outside its field. It is essential therefore that self-efficacy research in L2 learning classrooms strive to build on research from the broader context of education. This means replicating studies done in other subject areas and building research questions/hypotheses on this foundation. It also means using standard self-efficacy self-report instruments, testing past interventions, and applying the latest analytical tools, which are more common in areas such as educational psychology.

7. Conclusions

The present review examined nearly 17 years of research from the Social Science Citation Index regarding self-efficacy in L2 learning during formal education. In total, 166 studies were selected, charted and incorporated into the results presented. Pacific Asian researchers were well represented, Mainland China, Taiwan and Hong Kong particularly so. The growing research interest in self-efficacy is a positive sign for the region and field, given its strong relationship with achievement in education more broadly. The quality of the burgeoning literature, which is highlighted by this systematic review is, however, a source of concern. Conceptual issues such as unclear framing and lack of connections to foundational literature were too common.

Research designs' sophistication in measurement and controls raise serious concerns about the validity and replicability for much of the present research reviewed. This concern was significant enough to prevent this review from drawing even preliminary theoretical implications from the research reviewed.

On a more positive note, the present systematic review exposes a number of ways in which researchers might contribute to the rapidly growing field of self-efficacy in L2 education. The first of these might be to build more directly on Bandura's (1972) modeling research. Current L2 learning research in this area is often focused on self-regulated learning and anxiety. This preoccupation may be related to researchers' failure to recognize the fact that language classrooms are rich with modeling experiences, precisely the experiences for which Bandura (1977) saw self-efficacy as a self-regulating process.

References

- Bandura, A. (1972). *Psychological modeling: Connecting theories*. Aldine/Atherton.
- Bandura, A. (1976). *Social learning theory*. Prentice-Hall.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Bandura, A. (1978). The self system in reciprocal determinism. *American Psychologist*, 33(4), 344-358. <https://doi.org/10.1037/0003-066X.33.4.344>
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, 44(9), 1175-1184. <https://doi.org/10.1037/0003-066X.44.9.1175>
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28(2), 117-148. https://doi.org/10.1207/s15326985ep2802_3
- Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal of Management*, 38(1), 9-44. <https://doi.org/10.1177/0149206311410606>
- Batya, E., Berg, C., & Dodd, D. (1993). Previous learning experience, strategy beliefs, and task definition in self-regulated foreign language learning. *Contemporary Educational Psychology*, 18(3), 318-336.
- Clarivate Analytics (2017). *Web of science core collection*. http://wokinfo.com/products_tools/multidisciplinary/webofscience
- Cooper, H. (2016). *Research synthesis and meta-analysis* (5th ed.). Sage.
- Cumming, A. (1989). Writing expertise and second-language proficiency. *Language Learning*, 39(1), 81-135.
- Dong, L., Jamal Mohammed, S., Ahmed Abdel-Al Ibrahim, K., & Rezai, A. (2022). Fostering EFL learners' motivation, anxiety, and self-efficacy through computer-assisted language learning- and mobile-assisted language learning-based instructions. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.899557>
- Dörnyei, Z. (2014). *The psychology of the language learner: Individual differences in second language acquisition*. Taylor and Francis. <https://doi.org/10.4324/9781410613349>
- Ellis, N. C. (1994). *Implicit and explicit learning of languages*. Academic Press.
- Ellis, R., Skehan, P., Li, S., Shintani, N., & Lambert, C. (2020). *Task-based language teaching: Theory and practice*. Cambridge University Press.
- Flanders, J. P. (1968). A review of research on imitative behavior. *Psychological Bulletin*, 69(5), 316-337. <https://doi.org/10.1037/h0025721>
- Fryer, L. K., Ainley, M., & Thompson, A. (2016). Modelling the links between students' interest in a domain, the tasks they experience and their interest in a course: Isn't interest what university is all about? *Learning and Individual Differences*, 50, 157-165. <https://doi.org/10.1016/j.lindif.2016.08.011>

- Fryer, L. K., Bovee, H. N., & Nakao, K. (2022). Self-efficacy latent growth trajectories' longitudinal links with achievement and interest: Both baseline and growth rate are important for interest outcomes. *British Journal of Educational Psychology*, 92(2), 730-747. <https://doi.org/10.1111/bjep.12473>
- Fryer, L. K., Guo, Z., & Li, C. (2023). *Self-efficacy's role within learning a new language: Systematic review and critical evaluation of past research and paths forward for research and practice*. Pre-registration with the Open Science Framework. <https://doi.org/10.17605/OSF.IO/P76CA>
- Fryer, L. K., & Leenknecht, M. J. M. (2023). Toward an organising theoretical model for teacher clarity, feedback and self-efficacy in the classroom. *Educational Psychology Review*, 35(3), 68. <https://doi.org/10.1007/s10648-023-09787-5>
- Fryer, L. K., & Oga-Baldwin, W. (2019). Succeeding at junior high school: Students' reasons, their reach and the teaching that h(inders)elps their grasp. *Contemporary Educational Psychology*, 59, 101778. <https://doi.org/10.1016/j.cedpsych.2019.101778>
- Goddard, R. D., Hoy, W. K., & Woolfolk Hoy, A. (2000). Collective teacher efficacy: Its meaning, measure, and impact on student achievement. *American Educational Research Journal*, 37(2), 479-507. <https://doi.org/10.3102/00028312037002479>
- Hattie, J. (2008). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.
- Higgins, C. (2011). The formation of L2 selves in a globalizing world. In C. Higgins (Ed.), *Identity formation in globalizing contexts: Language learning in the new millennium* (Vol. 1, pp. 1-18). De Gruyter. <https://doi.org/10.1515/9783110267280.1>
- Honick, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review*, 17, 63-84. <https://doi.org/10.1016/j.edurev.2015.11.002>
- Kazdin, A. E. (1974). Covert modeling, model similarity, and reduction of avoidance behavior. *Behavior Therapy*, 5(3), 325-340.
- Kenny, A., Hyett, N., Sawtell, J., Dickson-Swift, V., Farmer, J., & O'Meara, P. (2013). Community participation in rural health: A scoping review. *BMC Health Services Research*, 13(1), 64-64. <https://doi.org/10.1186/1472-6963-13-64>
- Labarca, A., & Khanji, R. (1986). On communication strategies: Focus on interaction. *Studies in Second Language Acquisition*, 8(1), 68-79. <https://doi.org/10.1017/S0272263100005842>
- Liu, M., & Oga-Baldwin, W. L. Q. (2022). Motivational profiles of learners of multiple foreign languages: A self-determination theory perspective. *System*, 106, 102762. <https://doi.org/10.1016/j.system.2022.102762>
- Locke, E. A., & Latham, G. P. (2019). The development of goal setting theory: A half century retrospective. *Motivation Science*, 5(2), 93-105. <https://doi.org/10.1037/mot0000127>

- MacIntyre, P. D. (2007). Willingness to communicate in the second language: Understanding the decision to speak as a volitional process. *Modern Language Journal*, 91(4), 564-576. <https://doi.org/10.1111/j.15404781.2007.00623.x>
- Martín-Martín, A., Orduna-Malea, E., Thelwall, M., & López-Cózar, E. D. (2018). Google scholar, Web of Science, and Scopus: A systematic comparison of citations in 252 subject categories. *Journal of Informetrics*, 12(4), 1160-1177. <https://doi.org/10.1016/j.joi.2018.09.002>
- Matthews, P. H. (2010). Factors influencing self-efficacy judgments of university students in foreign language tutoring. *Modern Language Journal*, 94(4), 618-635. <https://doi.org/10.1111/j.1540-4781.2010.01057.x>
- Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., & Urdan, T. (2000). *Manual for the patterns of adaptive learning scales*. University of Michigan.
- Mills, N. A. (2004). *Self-efficacy of college intermediate French students: Relation to motivation, achievement, and proficiency* [Doctoral dissertation, Emory University]. Emory University ProQuest Dissertations Publishing.
- Mills, N., Pajares, F., & Herron, C. (2006). A reevaluation of the role of anxiety: Self-efficacy, anxiety, and their relation to reading and listening proficiency. *Foreign Language Annals*, 39(2), 276-295. <https://doi.org/10.1111/j.1944-9720.2006.tb02266.x>
- Mills, N., Pajares, F., & Herron, C. (2007). Self-efficacy of college intermediate French students: Relation to achievement and motivation. *Language Learning*, 57(3), 417-422. <https://doi.org/10.1111/j.1467-9922.2007.00421.x>
- Nosratinia, M., Saveiy, M., & Zaker, A. (2014). EFL learners' self-efficacy, meta-cognitive awareness, and use of language learning strategies: How are they associated? *Theory and Practice in Language Studies*, 4(5), 1080-1092. <https://doi.org/10.4304/tpls.4.5.1080-1092>
- Oxford, R., Crookall, D., Cohen, A., Lavine, R., Nyikos, M., & Sutter, W. (1990). Strategy training for language learners: Six situational case studies and a training model. *Foreign Language Annals*, 23(3), 197-216.
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Systematic Reviews*, 10(1). <https://doi.org/10.1136/bmj.n71>
- Pajares, F. (1986). Self-efficacy in academic settings. *Review of Educational Research*, 66, 543-578. <https://doi.org/10.2307/1170653>
- Peura, P., Aro, T., Räikkönen, E., Viholainen, H., Koponen, T., Usher, E. L., & Aro, M. (2021). Trajectories of change in reading self-efficacy: A longitudinal

- analysis of self-efficacy and its sources. *Contemporary Educational Psychology*, 64, 101947. <https://doi.org/10.1016/j.cedpsych.2021.101947>
- Pintrich, P. R., Smith, D. A., Garcia, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the Motivated Strategies for Learning Questionnaire (MSLQ). *Educational and Psychological Measurement*, 53(3), 801-813.
- Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin*, 138(2), 353-387. <https://doi.org/10.1037/a0026838>
- Schneider, M., & Preckel, F. (2017). Variables associated with achievement in higher education: A systematic review of meta-analyses. *Psychological Bulletin*, 143(6), 565-600. <https://doi.org/10.1037/bul0000098>
- Schunk, D. H. (1985). Self-efficacy and classroom learning. *Psychology in the Schools*, 22(2), 208-223. [https://doi.org/10.1002/1520-6807\(198504\)22:2<208::AID-PITS2310220215>3.0.CO;2-7](https://doi.org/10.1002/1520-6807(198504)22:2<208::AID-PITS2310220215>3.0.CO;2-7)
- Schunk, D. H. (1989). Self-efficacy and achievement behaviors. *Educational Psychology Review*, 1(3), 173-208. <https://doi.org/10.1007/BF01320134>
- Schunk, D. H. (1991). Self-efficacy and academic motivation. *Educational Psychologist*, 26(3-4), 207-231. <https://doi.org/10.1080/00461520.1991.9653133>
- Schunk, D. H., & DiBenedetto, M. K. (2021). Self-efficacy and human motivation. In A. J. Elliot. (Ed.), *Advances in motivation science* (Vol. 8, pp. 153-179). Elsevier. <https://doi.org/10.1016/bs.adms.2020.10.001>
- Schunk, D. H., & Hanson, A. R. (1989). Self-modeling and children's cognitive skill learning. *Journal of Educational Psychology*, 81(2), 155-163. <https://doi.org/10.1037/0022-0663.81.2.155>
- Schunk, D. H., & Pajares, F. (2002). The development of academic self-efficacy. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 15-31). Elsevier. <https://doi.org/10.1016/B978-012750053-9/50003-6>
- Sherman, J. A. (1971). Imitation and language development. *Advances in Child Development and Behavior*, 6, 239-272.
- Siddaway, A. P., Wood, A. M., & Hedges, L. V. (2019). How to do a systematic review: A best practice guide for conducting and reporting narrative reviews, meta-analyses, and meta-syntheses. *Annual Review of Psychology*, 70, 747-770. <https://doi.org/10.1146/annurev-psych-010418-102803>
- Skinner, B. F. (1963). Operant behavior. *American Psychologist*, 18(8), 503-515.
- Skinner, E. A. (1996). A guide to constructs of control. *Journal of Personality and Social Psychology*, 71(3), 549-570. <https://doi.org/10.1037/0022-3514.71.3.549>
- Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 85(4), 571-581. <https://doi.org/10.1037/0022-0663.85.4.571>

- Spector, P. E. (2019). Do not cross me: Optimizing the use of cross-sectional designs. *Journal of Business and Psychology*, 34(2), 125-137. <https://doi.org/10.1007/s10869-018-09613-8>
- Takeuchi, O. (2019). Language learning strategies: Insights from the past and directions for the future. In X. Gao (Ed.), *Second handbook of English language teaching* (pp. 683-702). Springer. https://doi.org/10.1007/978-3-030-02899-2_37
- Wang, C., Schwab, G., Fenn, P., & Chang, M. (2013). Self-efficacy and self-regulated learning strategies for English language learners: Comparison between Chinese and German college students. *Journal of Educational and Developmental Psychology*, 3(1). <https://doi.org/10.5539/jedp.v3n1p173>
- Wang, X., & Cheng, Z. (2020). Cross-sectional studies. *Chest*, 158(1), S65-S71. <https://doi.org/10.1016/j.chest.2020.03.012>
- White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, 66(5), 297-333. <https://doi.org/10.1037/h0040934>
- Yang, S., Azari Noughabi, M., & Jahedizadeh, S. (2022). Modeling the contribution of English language learners' academic buoyancy and self-efficacy to L2 grit: Evidence from Iran and China. *Journal of Multilingual and Multicultural Development*, 45(7), 20701-2717. <https://doi.org/10.1080/01434632.2022.2062368>
- Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology*, 81(3), 329-339. <https://doi.org/10.1037/0022-0663.81.3.329>
- Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology*, 25(1), 82-91. <https://doi.org/10.1006/ceps.1999.1016>
- Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal*, 29(3), 663-676. <https://doi.org/10.3102/00028312029003663>

APPENDIX

Coding description

Code	Description
Article information	
Author(s) & Year	The author(s) of the article and the year in which it was published. If there is more than one study in one article, each study of the article is coded in a separate line in the coding form.
Title	The title of the included article.
Journal	The journal in which the article was published.
Study aims	
Research aims in general	The research aims of the study.
Construct & theory/model	
Constructs related to self-efficacy in the research questions	Self-efficacy was primarily related to what constructs in the research questions investigated in the included article.
Self-efficacy types	Self-efficacy in listening/ speaking/ reading/ writing/ overall language learning, etc. of what specific language.
Self-efficacy's role in the research	What role self-efficacy plays and how self-efficacy is related to other constructs in the research: correlational, predicting variable, outcome, mediator, moderator, descriptive, person-centered, qualitative, validation of self-efficacy instrument.
Self-efficacy definition/theory	How self-efficacy was defined and what theory was used to define or explain self-efficacy (if any): social cognitive theory, expectancy-value theory, goal-setting theory, cited Bandura's self-efficacy definition, etc.
Second/new language learning theory/model (or broader theory/model) relevant to self-efficacy	The second/new language learning theory/model (or broader theory/model) the author(s) mentioned which involved/integrated self-efficacy as part of the theory/model.
Rationales explaining the relationship between self-efficacy and other constructs in the second/new language learning setting (if the author(s) did not mention any theory/model clearly)	If the author(s) did not mention any theory/model explicitly, what rationales were mentioned to explain the relationship between self-efficacy and other constructs in the second/new language learning setting?
Whether the second/new language learning theory/model (or broader theory/model) has been adapted to employing or integrating self-efficacy into their theory/model. If yes, how the adaptation has been conducted? (original text)	Whether the included study had adapted the previous second/new language learning theory/model (or broader theory/model) to incorporate or integrate self-efficacy into their theory/model (Yes or No?). <ul style="list-style-type: none"> • If yes, the original text which explained how the author(s) conducted the adaptation to incorporate or integrate self-efficacy into their theory/model was coded here.
Participants characteristics	
Country/region	The location where the study was implemented/where the participants were from.
Educational level	The educational level of the participants who attended formal education: primary education, secondary education, or tertiary education.
Target language	The second/new language which participants were learning.
Participants' target language proficiency level(s)	What the participants' target language proficiency level(s) was: low, intermediate, advanced, passed what specific tests (e.g., IELTS, TEM4), etc.
Study methodology	
Sample size	The number of participants in the included study.
Research paradigms relevant to self-efficacy	Qualitative/quantitative/mixed-methods research design. This code did not focus on the holistic research paradigm of the included study. Instead, it focused on the research paradigm that addressed questions related to self-efficacy.
Research design relevant to self-efficacy (experimental/observational)	Experimental with a control group, experimental without a control group, or observational. This code did not focus on the holistic research design of the included study. Instead, it focused on the research design that addressed questions related to self-efficacy.

Research design relevant to self-efficacy (cross-sectional/longitudinal/sequential/qualitative)	For quantitative studies: cross-sectional, longitudinal, or sequential. Qualitative studies were only coded as qualitative. This code did not focus on the holistic research design of the included study. Instead, it focused on the research design that addressed questions related to self-efficacy.
Research design relevant to self-efficacy (person-centered approach/variable-centered approach/qualitative)	For quantitative studies: person-centered approach or variable-centered approach. Qualitative studies were only coded as qualitative. This code did not focus on the holistic research design of the included study. Instead, it focused on the research design that addressed questions related to self-efficacy.
Analysis methods relevant to self-efficacy	For quantitative studies: t-test, ANOVA, SEM, etc. For qualitative studies: thematic analysis, content analysis, etc. This code did not focus on all analysis methods of the included study. Instead, it focused on the analysis methods that addressed questions related to self-efficacy.
Study outcomes	
Research outcomes relevant to self-efficacy	Reported research results related to self-efficacy in the included study. This code did not focus on all research outcomes of the included study. Instead, it focused on the research outcomes that addressed questions related to self-efficacy.