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Original Paper

AUTONOMOUS ENGLISH LEARNING THROUGH SOCIAL MEDIA AND COMMUNICATIVE COMPETENCE IN DIGITAL CONTEXTS WITHIN A CHINESE UNIVERSITY: PERSPECTIVES ON READINESS, DIGITAL LITERACY, AND EDUCATIONAL MANAGEMENT

Hongying Lyu[1]

[1] Graduate School, Emilio Aguinaldo College, Manila, Philippines

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Abstract

In the context of digitalization, social media has become a prominent environment for informal English learning among university students, and its potential contribution to communicative competence development has drawn growing attention. However, how autonomous English learning in social media relates to communicative competence remains unclear. This study examines the relationship between autonomous English learning through social media (AEL) and communicative competence in digital contexts (CDC), with particular attention to the mediating roles of learner readiness and digital literacy and the moderating role of educational management.

This study used a quantitative correlational design based on questionnaire data from 380 undergraduate students at a comprehensive university in Northeast China. Pearson correlation and mediation–moderation analyses were conducted using the PROCESS macro in SPSS.

AEL was positively associated with CDC. This relationship is partially mediated by readiness and digital literacy, with digital literacy exerting a slightly stronger effect. Educational management also significantly moderates the relationship between AEL and CDC, with the association becoming stronger at higher levels of support.

Overall, communicative competence in digital environments develops through the combined influence of autonomous learning engagement, psychological readiness, digital capabilities, and institutional support.

Keywords

autonomous English learning, social media–based learning, communicative competence, digital literacy, educational management

1. Introduction

1.1 Background of the Study

The fast-paced development of digital technologies, alongside the growing use of social media, has transformed how English is learned in Chinese higher education. English learning is no longer limited to classroom settings, but is increasingly embedded in a broader digital environment that brings together formal instruction and informal learning practices (Selwyn, 2016; Wang, 2020). Digital platforms and social media have expanded access to learning resources and reshaped the spatial and temporal structures within which language learning takes place.

In this context, English learning is no longer restricted to classroom instruction, but increasingly takes place across diverse digital platforms and social media spaces. Recent studies, in turn, have begun to examine patterns of learner participation and interaction within these environments (Jian, 2025). Research in foreign language education has shown that digital technologies make it possible for language learning to extend beyond formal instructional settings, taking place in informal and decentralized contexts embedded in learners' everyday digital practices (Kern, 2006; Thorne, 2008; Reinders & White, 2016). Recent empirical research further supports the educational potential of social media environments. Findings from a meta-analysis of foreign language learning studies point to generally positive effects of social media use on language learning outcomes, particularly in terms of greater exposure to authentic language input and increased opportunities for communicative engagement (Duha, 2025). For university students, social media has increasingly taken on a central role in informal English learning, with learners encountering and using English through everyday activities such as viewing, reading, commenting, and interaction (Sockett, 2014; Lee, 2019).

Within this context, autonomous English learning through social media is now widely observed among university students. Learner autonomy, as discussed in existing research, centers on learners taking responsibility for their learning processes and adjusting their learning activities in response to their own needs and goals (Holec, 1981; Benson, 2011). At the same time, with the normalization of digital communication practices, communicative competence in digital contexts has emerged as an important outcome of English learning. Communicating effectively in online environments requires not only linguistic knowledge but also clarity of expression, appropriateness of language use, interaction management, and accurate interpretation of meaning (Canale & Swain, 1980; Kern, 2006; Thorne, 2008).

However, even with widespread participation in social media-based autonomous learning, university students vary considerably in their development of communicative competence. Recent studies show that while learning engagement is important, it does not on its own guarantee communicative gains,

given that learning outcomes depend on learners' readiness, digital literacy, and contextual support conditions (Zimmerman, 2000; Hung et al., 2010; Bawden, 2008; Ng, 2012; Oga-Baldwin et al., 2017). Against this background, it is particularly important in the context of Chinese higher education to examine how learner readiness and digital literacy mediate this relationship, and how educational management support moderates it.

1.2 Research Gap

While the relationship between social media and English learning has been widely discussed, most studies tend to focus on describing learning behaviors or evaluating learning effects. Many studies focus on variables such as the frequency of social media use, participation patterns, and learning attitudes, and examine how these factors relate to language achievement, motivation, and perceived competence. This research orientation has largely followed a "use–effect" paradigm (Kern, 2006; Thorne, 2008; Reinders & White, 2016; Song & Xiong, 2023).

However, such an approach often assumes a linear relationship in which increased engagement in social media-based learning automatically leads to improved language competence. This perspective provides limited explanation of how autonomous English learning behaviors are transformed into communicative competence. Previous studies have rarely incorporated mechanism-based analytical models that examine the mediating factors involved in this transformation process (Benson, 2011; Larsen-Freeman, 2015).

Moreover, although digital environments are central to social media learning, differences in learners' digital literacy—such as information evaluation, technological operation, and multimodal communication abilities—are not always taken into account when explaining learning outcomes (Bawden, 2008; Ng, 2012; van Laar et al., 2017). Without considering these capability differences, the effectiveness of autonomous learning in digital contexts cannot be fully understood.

In addition, institutional and educational management support has often been treated merely as a background condition rather than as a contextual factor that may influence the relationship between learning behaviors and competence development (Selwyn, 2016; Scott, 2014; Huang et al., 2019). In university settings, policy guidance, resource allocation, and instructional support may significantly shape the sustainability and effectiveness of autonomous digital learning practices.

Therefore, existing research has yet to provide a systematic analytical framework that explains how autonomous English learning through social media is associated with communicative competence in digital contexts,and how this relationship may be mediated by learner readiness and digital literacy while being conditioned by educational management support.

1.3 Purpose of the Study

This study aims to examine the relationship between autonomous English learning through social media and communicative competence in digital contexts among Chinese university students. It specifically tests whether autonomous English learning through social media is associated with students' communicative competence in digital environments. In addition, the study analyzes the

mechanisms and contextual conditions underlying this relationship by investigating the mediating roles of learner readiness and digital literacy, as well as the moderating role of educational management support. These variables are incorporated into an analytical framework to provide a systematic account of how autonomous English learning through social media relates to communicative competence in digital contexts.

1.4 Research Questions

To achieve the research purpose, the following research questions are proposed:

RQ1. Is there a significant relationship between autonomous English learning through social media and communicative competence in digital contexts?

RQ2. Does readiness for autonomous English learning mediate the relationship between autonomous English learning through social media and communicative competence in digital contexts?

RQ3. Does digital literacy mediate the relationship between autonomous English learning through social media and communicative competence in digital contexts?

RQ4. Does educational management support moderate the relationship between autonomous English learning through social media and communicative competence in digital contexts?

2. Literature Review

2.1 Autonomous English Learning through Social Media

Autonomous English learning through social media (AEL) refers to learners' self-initiated and self-managed English learning activities conducted outside formal classroom instruction through social media platforms. In this study, AEL is conceptualized as a form of learning behavior that emphasizes how learners engage in English learning within digital environments, rather than the outcomes of learning. In line with the notion of learner autonomy, AEL reflects the extent to which learners assume responsibility for directing and managing their own learning processes (Holec, 1981; Benson, 2011).

Unlike formal course-based learning, autonomous learning through social media occurs primarily in informal digital environments and is embedded in learners' everyday online practices. Learning activities are not structured by institutional curricula or teacher guidance but are largely determined by learners' interests, goals, and participation patterns. As Benson (2011) notes, learner autonomy represents a learning orientation characterized by differences in the degree of control exercised by learners over their learning processes.

Within social media environments, AEL typically manifests through several observable behavioral characteristics. First, learning engagement refers to the frequency and intensity with which learners voluntarily encounter and use English through activities such as reading, watching videos, and interacting online (Reinders & White, 2016). Second, autonomous learning often demonstrates goal orientation, as learners establish personal objectives that guide their learning activities (Zimmerman, 2000). Third, learners actively search for and select digital learning resources that correspond to their interests and needs (Benson & Reinders, 2011). Finally, autonomous learning behaviors tend to develop

continuity and consistency over time, gradually forming sustained learning practices (Little, 2007).

In this study, AEL is viewed as the behavioral starting point of the learning process, with communicative competence in digital contexts developing from it under appropriate conditions.

2.2 Communicative Competence in Digital Contexts (CDC)

Communicative competence is widely treated as a major objective in language learning,with emphasis on learners' ability to use language effectively and appropriately in specific communicative contexts, rather than on the mastery of linguistic forms alone(Hymes, 1972). From this perspective,Canale and Swain (1980) described communicative competence as a multidimensional construct involving grammatical, pragmatic, discourse, and strategic abilities. This framework underscores that successful communication depends on how linguistic resources are used appropriately in particular social and communicative contexts.

As digital technologies continue to develop, language communication is increasingly taking place in online environments marked by multimodal information, asynchronous interaction, and evolving communicative norms (Kern, 2006; Thorne, 2008). These features point to the need to consider communicative competence within digital contexts, where language use is shaped by technological platforms and varied interactional formats.

In this study, communicative competence in digital contexts (CDC) refers to learners' ability to effectively convey, interpret,and negotiate meaning while communicating in English within digital communication environments. CDC is treated as a learning outcome, referring to learners' ability to use English functionally in authentic digital contexts rather than relying on test-based proficiency or self-perceived confidence. Here, CDC is reflected in four interrelated dimensions: clarity and coherence of expression, appropriateness of language use in digital settings, effectiveness of online interaction, and accuracy of message comprehension. Together, these dimensions capture learners' capacity to engage in meaningful English communication across social media and other digital platforms.

2.3 Learner Readiness for Autonomous Learning

In autonomous and digital learning contexts, engaging in learning activities does not by itself guarantee effective outcomes. Prior research in learning psychology points to the importance of learners' readiness in shaping whether these activities are actually taken up and sustained over time (Bielaczyc, 2006). Seen this way, readiness functions as a psychological condition between what learners do and what they eventually achieve, which helps explain why similar patterns of engagement can lead to different results (Hung et al., 2010; Smith, Murphy, & Mahoney, 2003).

In autonomous learning environments, responsibility for managing the learning process is largely placed on learners, making readiness especially salient. This reflects what research on learner autonomy has described as a shift of responsibility from external instructional structures to learners themselves (Little, 2007). However, not all learners are equally prepared to assume such responsibility, which may lead to differences in learning sustainability and effectiveness.

In this study, readiness for autonomous English learning refers to learners' overall psychological preparedness to initiate, sustain, and manage autonomous English learning through social media. Operationally, readiness reflects learners' motivational orientation toward autonomous learning, their perceived capacity for self-management, their ability to maintain learning discipline in digital environments, and their adaptability to changing learning tasks or contexts. Readiness is positioned between learning behavior and learning outcomes, serving as a mediating construct through which autonomous English learning behaviors may develop into communicative competence in digital contexts.

2.4 Digital Literacy

As digital technologies increasingly shape learning environments, researchers have emphasized that learners' performance in digital learning contexts depends not only on their motivation or learning intentions but also on their ability to effectively operate within digital environments. Digital literacy has therefore been proposed as a key construct for understanding learners' capability to engage in learning activities in technology-mediated contexts (Gilster, 1997; Bawden, 2008).

In the literature, digital literacy is no longer viewed as simply a matter of technical skills but as a broader ability to work with information in digital environments, including accessing, evaluating, interpreting, and producing it (Ng, 2012; van Laar et al., 2017). This becomes especially important in digital language learning, where learners have to deal with different platforms, make judgments about online information, and communicate through multiple modes (Dudeney et al., 2013). Recent research also points out that for university students, digital literacy now plays a central role in digitally mediated learning, as their ability to handle information, use tools, and engage in online communication often makes a noticeable difference in both their participation and outcomes (Georgopoulou et al., 2025).

In this study, digital literacy refers to learners' functional capability to effectively access, evaluate, process, and produce information in digital environments for the purpose of English learning and communication. Operationally, digital literacy includes learners' ability to use digital tools to support learning, critically evaluate online resources, generate English content through digital platforms, and solve problems encountered during digital learning activities. When understood as a set of practical abilities, digital literacy helps explain whether learners can actually carry out autonomous English learning and turn it into communicative competence in digital contexts (Redecker, 2017).

2.5 Educational Management Support (EMS)

Learning behaviors and outcomes are not shaped solely by individual factors but are also embedded within institutional and organizational environments. Research in educational management suggests that institutional arrangements, policy orientations, and organizational support constitute important contextual conditions that influence the sustainability of learning practices (Fullan, 2007; Kezar, 2014). In digital learning contexts, these institutional conditions become particularly significant as learning activities increasingly extend beyond formal classroom settings into informal and technology-mediated environments.

Previous studies indicate that without clear institutional guidance and support, digital learning practices often remain fragmented or short-term, making it difficult to develop sustainable learning ecologies (Selwyn, 2016). Institutional arrangements—policies, resource allocation, and coordination—affect whether digital learning activities are recognized, supported, and sustained in educational systems (Scott, 2014; OECD, 2015).

In this study, educational management support (EMS) refers to the institutional and organizational conditions provided by universities that support autonomous English learning through social media. EMS is conceptualized as a contextual and conditional factor that shapes the stability and sustainability of the relationship between autonomous learning behaviors and communicative competence. Operationally, EMS includes policy clarity, availability of learning resources, guidance mechanisms, and feedback or evaluation arrangements related to digital and autonomous learning. Rather than directly determining learning outcomes, EMS influences the conditions under which autonomous learning behaviors can be sustained and translated into communicative competence (Benson, 2011).

2.6 Conceptual Framework

Based on the theoretical perspectives discussed above, the conceptual framework of the present study is presented in Figure 1. According to the model, autonomous English learning through social media contributes to communicative competence in digital contexts through learner readiness and digital literacy. It further indicates that educational management support moderates the relationship between learning behavior and competence development.

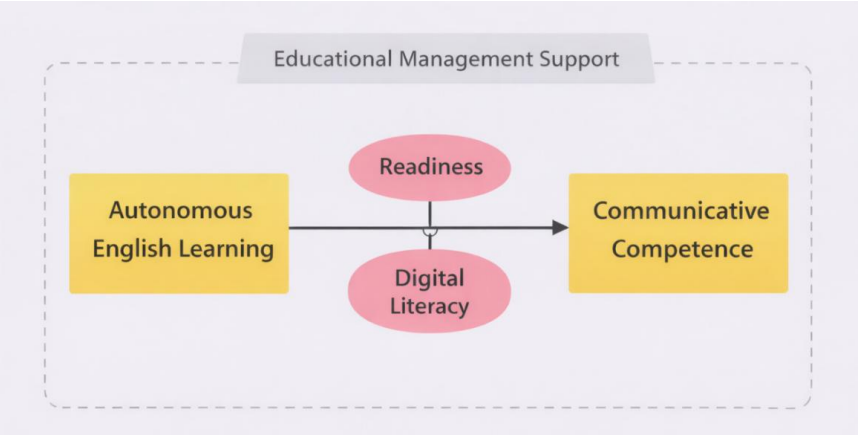

Figure 1. Conceptual Framework of the Study

3. Methodology

3.1 Research Design

This study uses a quantitative correlational design to explore how autonomous English learning through social media relates to communicative competence in digital contexts among university students. Based on questionnaire data, it looks at how learning behaviors connect with communicative

competence and considers the factors and conditions that may influence this relationship.

This study uses a cross-sectional, non-experimental design. Data were collected once in a natural educational setting, with no intervention or changes to learning conditions. A structured questionnaire, developed based on established theoretical literature and aligned with the conceptual framework of the study, was used to collect learners' self-reported perceptions of their learning behaviors, competence development, and relevant learning conditions.

The research design focuses on examining relational patterns among the study variables. Correlational analysis is employed to examine the relationship between autonomous English learning through social media and communicative competence in digital contexts, while mediation and moderation analyses are conducted to explore the roles of learner readiness, digital literacy, and educational management support in the learning transformation process.

3.2 Research Context and Participants

This study was conducted at a comprehensive public university in Northeast China. The university offers a wide range of academic programs across disciplines such as humanities, science and engineering, agriculture, medicine, education, and management, with approximately 30,000 enrolled students in 2025. English is offered as a compulsory general course for undergraduate students, providing a common foundation for English learning across different academic majors. In addition to formal classroom instruction, students frequently engage with digital media and social networking platforms in their daily lives, creating a learning environment in which English learning activities may extend beyond classroom settings.

The participants of this study were second- and third-year undergraduate students at the selected university. Students at this stage have generally completed the initial transition to university-level English learning and have accumulated certain experiences with both formal instruction and autonomous learning practices. Their learning activities therefore represent a context in which classroom-based learning and informal digital learning coexist.

Data were collected through an anonymous online questionnaire, and participation in the survey was voluntary. A convenience sampling strategy was adopted for questionnaire distribution. A total of 400 questionnaires were distributed, and 380 valid responses were obtained. The sample size was considered sufficient for statistical analysis involving relationships among multiple variables in questionnaire-based educational research (Cohen et al., 2003; Field, 2018; Tabachnick & Fidell, 2019).

3.3 Research Instruments

A structured self-report questionnaire was used as the primary research instrument to collect data on university students' autonomous English learning through social media and related variables. The questionnaire was developed based on relevant theoretical literature and aligned with the conceptual framework of the study.

The instrument was made up of five subscales measuring the main constructs: Autonomous English Learning through Social Media (AEL), Communicative Competence in Digital Contexts (CDC),

Readiness for Autonomous English Learning, Digital Literacy, and Educational Management Support (EMS). Altogether, it contained 58 items.

The AEL scale consisted of 12 items measuring students' engagement in autonomous English learning through social media, including engagement frequency, goal-setting and planning strategies, proactive content-seeking behavior, and consistency in learning routines.

The CDC scale consisted of 9 items assessing students' ability to communicate effectively in digital contexts, including clarity and coherence of expression, appropriateness of language use, effectiveness of online interaction, and accuracy of message comprehension.

The Readiness scale contained 10 items that reflected learners' motivation, self-efficacy for autonomous learning, learning discipline, and adaptability in digital learning environments.

The Digital Literacy scale included 15 items to assess students' abilities in digital tool use, information evaluation, digital safety awareness, content creation, and problem-solving in digital environments.

The EMS scale comprised 12 items assessing students' perceptions of institutional support, including guidance mechanisms, resource accessibility, policy clarity, and feedback channels related to digital English learning.

All items were rated on a four-point Likert scale ranging from 1 (Not true of me) to 4 (Very true of me). Scale scores were calculated using mean values and used for subsequent statistical analyses.

The instrument was further reviewed by experts in English education and applied linguistics to ensure content clarity and construct relevance before formal data collection.

3.4 Data Analysis

Data analysis was conducted using SPSS statistical software. Prior to analysis, the dataset was screened and coded to ensure data quality and completeness.

Pearson product–moment correlation analysis was first performed to examine the relationship between Autonomous English Learning through Social Media (AEL) and Communicative Competence in Digital Contexts (CDC).

To further examine the mechanisms underlying this relationship, mediation and moderation analyses were conducted using the PROCESS macro for SPSS (Hayes, 2018) with bootstrapping procedures (5,000 resamples). Mediation analysis was performed to test the mediating roles of Readiness and Digital Literacy in the relationship between AEL and CDC. In addition, moderation analysis was conducted to examine whether Educational Management Support (EMS) moderates the relationship between AEL and CDC. Interaction effects were examined by introducing the interaction term between AEL and EMS.

These analytical procedures enabled the study to examine the direct relationship between AEL and CDC as well as the mediating and moderating mechanisms underlying this relationship.

4. Results

4.1 Preliminary Analyses

Prior to the main statistical analyses, preliminary analyses were conducted to examine data quality and the reliability of the measurement scales. A total of 380 valid responses were retained for analysis. Examination of boxplots and standardized z-scores indicated no severe outliers, suggesting that the dataset was suitable for subsequent statistical analyses.

The internal consistency of the measurement scales was assessed using Cronbach's alpha coefficient. The results indicated satisfactory reliability for all constructs, with α values ranging from .821 to .891 (see Table 1).

Assumptions were also checked to ensure the data were suitable for regression analysis. Skewness and kurtosis for all variables fell within ±1, suggesting the data were approximately normally distributed. VIF values ranged from 1.01 to 1.60, indicating no issues with multicollinearity. In addition, Harman's single-factor test showed that the first unrotated factor explained 17.01% of the total variance, well below the 40% threshold, suggesting that common method bias was not a major concern in this study.

Table 1. Reliability of the Measurement Scales (N = 380)

Construct	Items	Cronbach's α
Autonomous English Learning (AEL)	12	.850
Communicative Competence (CDC)	9	.868
Readiness	10	.839
Digital Literacy	15	.891
Educational Management Support (EMS)	12	.821

4.2 Correlation Analysis (RQ1)

Pearson correlation analysis was conducted to examine the relationship between Autonomous English Learning through Social Media (AEL) and Communicative Competence in Digital Contexts (CDC).

A significant positive correlation was found between AEL and CDC ($r = .281$, $p < .001$; see Table 2), indicating that greater engagement in autonomous English learning through social media is associated with greater communicative competence in digital contexts.

The effect size ($r = .281$) indicates a modest association, suggesting that AEL explains a limited proportion of variance in CDC. This implies that additional factors, such as learner readiness and digital literacy, may also contribute to communicative competence.

Table 2 presents the correlation matrix between the two variables.

Table 2. Correlation Matrix

Variable	1	2
AEL	—	.281***
CDC	.281***	—

Note. *** p < .001.

4.3 Mediation Analysis

4.3.1 Mediating Role of Readiness (RQ2)

To examine RQ2, mediation analysis was conducted to test whether Readiness mediates the relationship between Autonomous English Learning through Social Media (AEL) and Communicative Competence in Digital Contexts (CDC).

The results indicated that AEL significantly predicted Readiness (β = 0.538, p < .001). In addition, Readiness significantly predicted CDC when controlling for AEL (β = 0.194, p = .001).

When both AEL and Readiness were included in the regression model predicting CDC, the direct effect of AEL remained significant (β = 0.220, p < .001), although the magnitude of the effect decreased.

Bootstrapping analysis further confirmed that the indirect effect through Readiness was statistically significant (indirect effect = 0.104, 95% CI [0.049, 0.168]).

These findings indicate that Readiness partially mediates the relationship between AEL and CDC.

4.3.2 Mediating Role of Digital Literacy (RQ3)

To address RQ3, mediation analysis was conducted to test whether Digital Literacy mediates the relationship between Autonomous English Learning through Social Media and Communicative Competence in Digital Contexts.

The results indicated that AEL significantly predicted Digital Literacy (β = 0.443, p < .001). Digital Literacy also significantly predicted CDC (β = 0.297, p < .001).

After Digital Literacy was included in the regression model, the direct effect of AEL on CDC remained significant but was reduced in magnitude.

Bootstrapping analysis showed that the indirect effect through Digital Literacy was statistically significant (indirect effect = 0.132, 95% CI [0.072, 0.205]).

These findings indicate that Digital Literacy also plays a significant partial mediating role in the relationship between AEL and CDC.

Table 3. Regression Results for the Mediation Model

DV	Predictor	β	SE	t	p
Readiness	AEL	0.538	0.045	11.93	<.001
Digital Literacy	AEL	0.443	0.042	10.62	<.001

CDC	AEL	0.220	0.051	4.31	<.001
CDC	Readiness	0.194	0.058	3.34	.001
CDC	Digital Literacy	0.297	0.056	5.30	<.001

Table 4. Bootstrapping Results of Indirect Effects

Path	Indirect Effect	Boot SE	95% CI LL	95% CI UL
AEL → Readiness → CDC	0.104	0.031	0.049	0.168
AEL → Digital Literacy → CDC	0.132	0.034	0.072	0.205

4.4 Moderation Analysis (RQ4)

To address RQ4, a moderated regression was used to test whether Educational Management Support (EMS) moderates the relationship between Autonomous English Learning through Social Media (AEL) and Communicative Competence in Digital Contexts (CDC). Prior to analysis, AEL and EMS were mean-centered, and their interaction term (AEL × EMS) was computed. The results showed that AEL significantly predicted CDC ($\beta = 0.322$, $p < .001$), while EMS did not have a significant direct effect ($\beta = -0.010$, $p = .867$).

However, the interaction term (AEL × EMS) was statistically significant ($\beta = 0.411$, $p < .001$), indicating that EMS significantly moderates the relationship between AEL and CDC.

This result suggests that the positive association between AEL and CDC becomes stronger when the level of educational management support increases.

Table 5. Moderated Regression Results

Predictor	β	SE	t	p
AEL	0.322	0.056	5.74	<.001
EMS	-0.010	0.059	-0.17	.867
AEL × EMS	0.411	0.104	3.95	<.001

The moderating effect of Educational Management Support (EMS) is illustrated in Figure 2. The figure shows that the positive relationship between Autonomous English Learning through Social Media (AEL) and Communicative Competence in Digital Contexts (CDC) becomes stronger at higher levels of EMS.

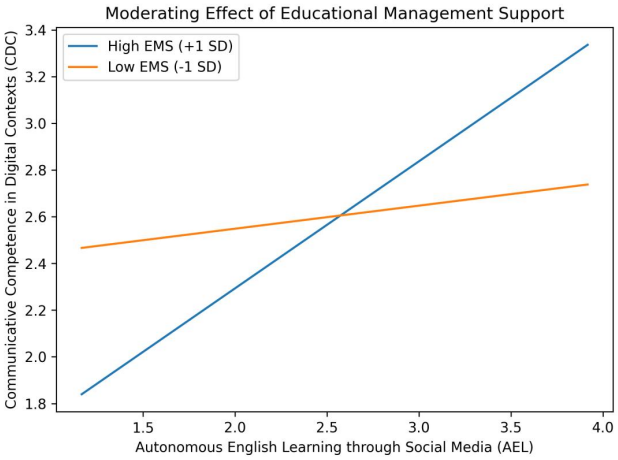

Figure 2. Moderating Effect of EMS

5. Discussion

5.1 Relationship between Autonomous English Learning through Social Media and Communicative Competence in Digital Contexts

AEL was positively related to CDC, suggesting that students who actively engage in autonomous English learning through social media tend to show higher levels of communicative competence in digital contexts.

This result can be understood in light of theories of learner autonomy and communicative competence. In this view, learner autonomy refers to learners taking active control over their learning processes, such as setting goals, choosing resources, and managing their own learning (Holec, 1981; Benson, 2011). Within social media environments, such autonomy is reflected in learners' integration of English learning activities into their everyday digital practices. Frequent engagement with English content and interaction on social media may increase exposure to authentic language input and provide opportunities for communicative practice.

Communicative competence theory suggests that language ability develops through participation in meaningful communication (Hymes, 1972; Canale & Swain, 1980). In digital environments, platforms offer learners opportunities to read, respond to, and produce English-language content, which can support skills such as organizing ideas, maintaining interaction, and interpreting meaning in online communication (Kern, 2006; Thorne, 2008).

Nevertheless, the relationship observed in this study was moderate, indicating that autonomous learning behaviors alone may not fully explain variations in communicative competence development. The observation is consistent with previous arguments suggesting that learner autonomy, as a learning orientation, does not automatically guarantee successful learning outcomes (Benson, 2011). Instead, the transformation of learning behaviors into competence development may depend on additional psychological and contextual conditions.

5.2 Mediating Roles of Readiness and Digital Literacy

Readiness and digital literacy also acted as significant mediators between AEL and CDC, suggesting that the effect of autonomous English learning on communicative competence is not only direct but also operates through learners' psychological readiness and digital capabilities.

The mediating effect of readiness points to the role of learners' psychological preparedness in autonomous learning. It reflects factors such as motivation, self-management, learning discipline, and the ability to adapt to different tasks. Previous studies suggest that such readiness affects whether learners can sustain engagement and turn learning opportunities into competence (Bielaczyc, 2006; Hung et al., 2010). This becomes especially important in social media contexts, where learning is often less structured than in formal classroom settings.

The mediating role of Digital Literacy further indicates that learners' capability to operate within digital environments is a crucial condition for translating learning behaviors into communicative competence. Digital literacy involves the ability to access, evaluate, and produce information in digital contexts (Gilster, 1997; Bawden, 2008; van Laar et al., 2017). In social media learning environments, learners must navigate digital platforms, evaluate online resources, and participate in multimodal communication activities. These capabilities enable learners to engage more effectively in digital interaction and meaning-making processes (Kern, 2006; Thorne, 2008).

Notably, the mediating effect of digital literacy was slightly stronger than that of readiness. The result further indicates that, in digital learning contexts, learners' functional capabilities within technological environments may exert a particularly direct influence on communicative competence development.

5.3 Moderating Role of Educational Management Support

Educational Management Support (EMS) emerged as a significant moderator of the relationship between AEL and CDC. The association between autonomous English learning and communicative competence becomes stronger under higher levels of institutional support.

The moderating effect observed in this study underscores the significance of institutional contexts in shaping the effectiveness of autonomous learning. Educational management support represents institutional conditions such as policy guidance, resource provision, and learning support mechanisms. Research in educational management suggests that institutional environments play an important role in shaping the sustainability of learning practices (Fullan, 2007; Scott, 2014).

In digital learning contexts, institutional support can help legitimize and sustain autonomous learning activities. When universities offer clear guidance, resources, and recognition for digital practices, students are more likely to continue engaging in autonomous English learning through social media. Without such support, these activities may remain fragmented or short-lived (Selwyn, 2016).

Communicative competence in digital contexts appears to be shaped by a combination of factors, including autonomous learning engagement, psychological readiness, digital capabilities, and institutional support. This suggests the importance of adopting an integrated perspective that incorporates behavioral, psychological, capability, and institutional dimensions.

5.4 Implications

5.4.1 Theoretical Implications

This study provides several theoretical contributions to the understanding of autonomous English learning in digital environments. First, this study builds on existing research examining the relationship between social media use and language learning. Earlier work has tended to emphasize the direct link between social media use and language learning outcomes.A positive association is observed between autonomous English learning through social media and communicative competence in digital contexts, although the strength of this relationship is only moderate. The finding suggests that learning engagement alone cannot fully explain variations in competence development, supporting recent perspectives that emphasize the complex mechanisms linking learning behaviors and learning outcomes. Another theoretical contribution lies in the introduction of readiness as a psychological explanatory construct. This perspective enriches the theoretical framework of autonomous learning research. The findings indicate that readiness partially mediates the relationship between autonomous learning and communicative competence. This result highlights the importance of learners' psychological preparedness, including motivation, self-management awareness, and learning discipline, in facilitating the transformation of learning engagement into competence development (Bielaczyc, 2006; Hung et al., 2010).

In addition, the study demonstrates that digital literacy also functions as a significant mediating factor and that its mediating effect is slightly stronger than that of readiness. This finding indicates that learners' capability to access, evaluate, and produce information in digital environments plays a critical role in transforming learning behaviors into communicative competence (Gilster, 1997; Bawden, 2008; van Laar et al., 2017). In this sense, the study highlights the importance of digital capabilities in digital language learning contexts.

Finally, by incorporating educational management support (EMS) as a contextual moderator, the study introduces an institutional perspective into research on autonomous learning. The results show that institutional support strengthens the relationship between autonomous learning and communicative competence, suggesting that learning behaviors in digital environments are shaped not only by individual factors but also by institutional contexts (Fullan, 2007; Scott, 2014).

Overall, by integrating learning behaviors, psychological readiness, digital capability, and institutional context, this study provides a multidimensional perspective for understanding how autonomous English learning through social media contributes to communicative competence development in digital contexts.

5.4.2 Practical Implications

Several practical implications for English education and educational management in higher education can be drawn from this study.

One practical implication is that social media can serve as an important complementary learning environment for English learning. Since autonomous English learning through social media is

positively associated with communicative competence, teachers may consider integrating social media into learning activities by encouraging students to engage with English content, participate in online interaction, and produce digital communication in English.

Another implication relates to the mediating role of readiness, pointing to the need to support students' psychological preparedness for autonomous learning. Universities and teachers can offer guidance, strategy training, and structured planning to help students build motivation, self-regulation, and learning discipline in digital environments.

The findings also demonstrate that digital literacy plays a crucial role in enabling effective learning in digital environments. Therefore, universities should promote the development of students' digital literacy through training programs or instructional activities that enhance their abilities to evaluate online information, use digital tools, and produce digital content for communication.

Finally, the moderating role of educational management support underscores the importance of institutional environments. Universities may strengthen the effectiveness of social media–supported English learning by providing clear policy guidance, accessible learning resources, and structured feedback mechanisms. Such institutional support can help create a more stable and sustainable environment for autonomous learning.

The findings indicate that the impact of autonomous English learning in digital environments is shaped not only by learners' engagement but also by their psychological readiness, digital literacy, and the level of institutional support provided by educational management.

5.5 Limitations and Future Research

Several limitations of this study should be acknowledged.

First, the sample was drawn from a single institution, which may limit the generalizability of the findings. Future research could include students from different regions and types of institutions to examine whether the model holds across more diverse educational settings.

Second, the study relied on self-reported questionnaire data. While this approach allows for efficient large-scale collection, it may be affected by subjective perceptions and social desirability. Future studies could draw on multiple data sources, such as interviews, learning logs, or digital learning analytics, to provide a more comprehensive picture.

Third, this study adopted a cross-sectional research design. While regression-based analyses were conducted to examine relationships among variables, the design does not allow strong causal inference. Future research may employ longitudinal or experimental approaches to explore the dynamic relationships between autonomous English learning, digital literacy, and communicative competence development in digital environments.

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