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Influences of Online Learning Environment on International Students' Intrinsic Motivation and Engagement in the Chinese Learning

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ABSTRACT

With the impact of the COVID-19 pandemic, Chinese teaching for international students in Chinese universities has largely moved online. Despite the comprehensive literature regarding the influences of environmental factors on domestic students' learning in traditional learning environment, few studies have addressed the influences of online learning environment (OLE) on international students' Chinese learning experiences. We focus on international students in intensive Chinese courses at a Chinese university, and explores the influences of OLE on these students' intrinsic motivation (IM) towards and engagement in Chinese learning during the COVID-19 pandemic. Data were collected from an online questionnaire survey and follow-up interviews. The results revealed that the participants had positive perceptions of the online Chinese learning environment, and that the participants had high levels of IM towards and engagement in their Chinese learning. The results also showed the positive impact of the participants' perceived OLE on their IM towards and engagement in Chinese learning. The research, though with several limitations, has implications for teachers teaching Chinese as a foreign language and institutions promoting international students' IM and SE in online teaching contexts.

Keywords: online learning environment, intrinsic motivation, student engagement, international students, learning Chinese as a foreign language

BACKGROUND

In the last few decades, China has witnessed a dramatic increase in the number of international students it hosts. In 1999, 44,711 international students studied at 356 higher education institutions in China (Ministry of Education of the People's Republic of China [MoE], 2015). From 2005 to 2015, the average annual increase rate of international students in China reached 16.92% (Fang & Wu, 2016). In 2018, 492,185 international students dispersed in 1004 Chinese higher education institutions (MoE, 2019). With China gaining increasing global influences, learning the Chinese language has also gained popularity. In 2020, approximately 25 million people were studying Chinese globally as a foreign language; 70 countries worldwide had integrated Chinese into their education system (MoE, 2020).

Since the worldwide spread of the COVID-19 pandemic, higher education has primarily converted online (Ali, 2020). The international student population was one of the most affected and vulnerable communities during the pandemic (Sarker et al., 2021). Research has reported challenges and difficulties faced by international students during the pandemic. For example, Younis et al. (2020) found that international students in China during the period suffered from various psychological problems, such as stress and anxiety, especially those living in the most affected regions. Despite the growing research on the impacts of the COVID-19 pandemic in general and those on international students in specific (e.g., Crawford et al., 2020; Hofer et al., 2021), few studies focused on these students' online Chinese learning during the pandemic and how the OLE affects their IM towards and engagement in their online Chinese courses.

LITERATURE REVIEW

Online Learning Environment

Lim and Fraser (2018) define the learning environment as social, psychological, and pedagogical in-class and off-campus contexts, where learning occurs. Lim and Fraser (2018), by reviewing 20 past studies on the learning environment in various subject areas, pointed out that learning environment affected students' learning attitudes, and was a critical predictor of students' cognitive and affective development. Other scholars argued that the quality of learning environments is a crucial factor to be investigated in evaluating the effectiveness of educational programs (Wubbels, 2006).

In the last few decades, with the development of information technology, OLE has gained growing popularity in higher education. It introduces new possibilities to further facilitate knowledge, skills and attitudes that otherwise could not be advanced in traditional learning environment (Chang et al., 2015). As suggested by Chen and Jang (2010), OLE, with its features of flexibility and choice, technical skills, and social interactions, poses significant challenges for both learning and teaching.

Despite these challenges, many researchers have reported that once well managed, the OLE can have positive impacts (e.g., Akbari et al., 2016; Broadbent, 2017). Young and Norgard (2006), by reviewing previous literature, discussed the factors contributing to the efficiency and effectiveness of online courses. They summarized that given adequate technical support and opportunities for timely interaction with peers, the flexibility of online courses helps to support students' study. Novel teaching methods and careful course management also contribute to high-quality online learning (Jung, 2011) and high-level student satisfaction (Sher, 2009; Yukselturk & Bulut, 2007).

Since the outbreak of the COVID-19 pandemic, an emerging number of studies have investigated the influences of OLE on college students. Patricia (2020) collected qualitative and quantitative data regarding students' perceptions and uses of emergency online education due to COVID-19. The results demonstrated that under the OLE, students' learning motivation was lower than their motivation before the pandemic. Gonzalez et al. (2020) reported significant improvement in students' grades during COVID-19, compared to the grades of the students taking the same courses in the year prior to the pandemic. The reason was attributed to their continuous autonomous learning strategies that the students adopted over the pandemic, and the consequently increased efficiency in learning. Despite the contribution of the research, more research is urgently needed to deepen our understanding of how the COVID-19 pandemic and the emergency online education affect international students' learning.

Intrinsic Motivation (IM)

William James first described IM as "interest and instincts of constructiveness" (James, 1890, p.162). Ryan and Deci (2000) define IM as "the doing of an activity for its inherent satisfaction" (p.56). It is distinguished from extrinsic motivation, which refers to the "construct that pertains whenever an activity that is done in order to attain some separable outcome" (p.60). When an individual is intrinsically motivated, he or she initiates the activity, which, once completed, would bring about a sense of satisfaction and fulfillment.

The concept of IM can be further understood within the self-determination theory (SDT) proposed by Ryan and Deci (2000). In SDT, Ryan and Deci proposed three fundamental psychological needs, i.e., competence, autonomy, and relatedness. According to SDT, IM is triggered by these innate psychological needs and requires no reward other than interest and enjoyment. Each individual possesses these three psychological needs, and these psychological needs help to foster self-motivation in turn.

Based on SDT, Vallerand et al. (1992) further classified IM into three types, namely IM to know, IM toward accomplishment, and IM to experience stimulation. The first type, IM-knowledge, associates IM to the conduction of an activity to gain knowledge. The second type, IM-accomplishment, relates to the satisfaction and pleasure brought about by successfully accomplishing a targeted goal. The third type, IM-stimulation, refers to the excitement of performing a task. This three-component taxonomy advanced the understanding of IM in learning.

Although IM is liberally endowed in humans, the sustainability and reinforcement of this inherent propensity rely on social and environmental conditions around the individuals (Ryan & Deci, 2000). Ryan and Deci's Cognitive Evaluation Theory (CET) worked as a sub theory within SDT that emphasizes the social and environmental variables that could enhance or diminish IM. It suggests that social and task environments are crucial for affecting a person's feelings of competence, autonomy, and relatedness. In education, classroom and home environments could facilitate or forestall IM by enabling versus undermining students' psychological needs (Ryan & Deci, 2000). In line with Ryan and Deci, empirical research in traditional learning environment has reported statistically significant correlations between motivation and students' perception of the learning environment (e.g., Bi, 2015; Cerasoli et al., 2014; Chua et al., 2009; Hardré et al., 2006; Shi & Gao, 2017). Similarly, the research on IM in online contexts has reported the significance of OLE to students' learning processes (Ushida, 2005) and learning outcomes (Liu & Chu, 2010).

Moreover, a growing number of studies have explored the factors influencing IM in the online context. For example, Fırat et al. (2018) evaluated the levels of IM of 1,639 students involved in distance education and found that the students' IM in OLE was not affected by their gender, program types, teaching methods, or academic disciplines. Hartnett et al. (2011) explored students' learning motivation in OLE. The research found that students' motivation in online learning activities was multifaceted, situation-dependent, and complex. The specific learning contexts and the interaction with teachers and peers were likely to influence students' motivation to learn. Hartnett (2015) went further and identified a more comprehensive range of social and contextual factors in OLE that influenced students' perceived fulfillment of their psychological needs, including high workload, assessment pressure, or lack of interaction. Further research is needed to deepen our understanding of the influence of OLE on international students' IM in Chinese language learning.

Student Engagement (SE)

As defined by Hu and Kuh (2002), student engagement (SE) is "the quality of effort students themselves devote to educationally purposeful activities that contribute directly to desired outcomes" (p.555). It involves time and energy students invest in their learning activities (Kuh, 2003). Fredricks et al. (2004) classified three types of engagement, namely, behavioral engagement, emotional engagement and cognitive engagement. Behavioral engagement refers to students' involvement and its positive conduct, such as following the rules. Emotional engagement is about students' overall positive affective reactions, including happiness, enjoyment, and sense of belonging. According to Fredricks et al. (2004), cognitive engagement is the investment in one's activities and appreciation of challenges.

A large volume of research has explored the effect of SE on learning, which reported a close linkage between SE and positive academic performance (Kuh et al., 2012), improved learning outcomes (Carini et al., 2006), and enhanced levels

of satisfaction (Zhao & Kuh, 2004). Previous research also investigated the influences of contextual factors on SE. Such research suggested that a positive learning environment, including diversified teaching methods and high-quality student-teacher interaction, could facilitate SE (e. g., Zhang et al., 2015; Tian et al., 2020).

With the development of information technology, researchers have investigated the relationship between SE and online learning contexts. For example, Chen et al. (2010) collected questionnaire responses from 23,706 college students and found a generally positive relationship between using online learning technology and SE. Robinson and Hullinger's study (2008), online students reported higher levels of engagement than on-campus students. Dixson (2010) surveyed students at six campuses in the U.S., and the results suggested that the improved student-student and student-teacher communication were strongly correlated with higher SE. Young & Bruce (2011) examined students' classroom community and reported that student interaction had a moderate positive correlation with SE. Junco et al. (2011) reported a significant increase in SE when students were supported by online social networks throughout their learning processes. Despite the contribution of the previous research, it remains largely unknown how international students engage in the emergency online Chinese education, as a response to the pandemic. It is of urgency to explore how international students' perceived OLE influences their engagement in Chinese language learning.

RESEARCH METHODS

This research explores international students' learning experiences in emergency online Chinese courses provided by a Chinese university during the Covid-19 pandemic. Specifically, the research explores:

1) the participants' perceptions of the OLE that they have experienced in the online Chinese courses;
2) the participants' perceptions of their IM towards Chinese learning in the online Chinese courses;
3) the participants' perceptions of their engagement in Chinese learning in the online Chinese courses;
4) the impact of the participants' perceived OLE on their IM towards and engagement in Chinese learning in the online Chinese courses.

Questionnaire Measurement

The questionnaire used in this research consisted of two parts. The first part was to collect the participants' demographic information. The second part investigated the participants' perceptions of online Chinese learning environment, their self-reported IM towards and engagement in Chinese learning. The second part of the questionnaire contained five-point, Likert-type question items. Participants were asked to indicate their levels of agreement with each item by choosing from the following five options: strongly disagree, disagree, neutral, agree, and strongly agree.

Specifically, to measure students' perceptions of their online Chinese learning environment, three subscales of the Web-based Learning Environment Instrument (WEBLEI, Chang & Fisher, 2001) were adopted, which respectively explored participants' perceptions of convenience and efficiency of the OLE (access, 7 items, e.g., the flexibility allows me to explore my own areas of interest), their interaction with peer students (interaction, 3 items, e.g., other students respond promptly to my queries) and online course structure and designed activities (course organization, 8 items, e.g., the structure of each lesson keeps me focused on what is to be learned). A subscale of the University Mathematics Classroom Environment Questionnaire (UMCEQ, Yin & Lu, 2014) was also included (teacher support, 6 items, e.g., instructors help us when we have difficulty in learning), given the crucial role that teachers played in supporting students' successful online learning. All items on the students' perceived OLE had been re-worded to fit the purpose of this research. For example, the original item "The instructor has constant communications with students" was changed to "The instructor of my Chinese course has constant communications with students".

To measure students' IM towards Chinese learning, nine items measuring IM in the Academic Motivation Scale (AMS, Vallerand et al., 1992) were adopted in this research. These nine items further consist of three items measuring IM-knowledge (e.g., [I learn] because I experience pleasure and satisfaction while learning new things), three items measuring IM-accomplishment (e.g., [I learn] for the satisfaction I feel when I am in the process of accomplishing difficult academic activities), and three items measuring IM-stimulation (e.g., [I learn] for the intense feelings I experience when I am communicating my own ideas to others). All items were modified to fit the current research purpose. For instance, the original heading question, i.e., "why do you go to college?", has been changed into "why do you study the Chinese language even when the courses are moved online?". The item "[I learn] because I experience pleasure and satisfaction while learning new things." has been modified into "[I study Chinese even in the online context]" because I experience pleasure and satisfaction while learning new things in Chinese."

Students' engagement was measured using the Student Course Engagement Scale (SCEQ, Briggs & Towler, 2005). SCEQ examines behavioral engagement (4 items, e.g., I try hard to do well in school), emotional engagement (3 items, e.g., I think what we are learning in school is interesting) and cognitive engagement (2 items, e.g., I try to understand the learning material better by relating it to what I already know). All items were modified for the purpose of the current research. For example, the original question "I think what I am learning is interesting" was re-worded into "I think what we are learning in my online Chinese lessons is interesting".

Survey Procedure

Data collection took place in January 2021 at a national key university located in central China. When the research was conducted, all Chinese courses designed

for international students in this university had moved online as a response to the Covid 19 pandemic. Both English and Chinese versions of the questionnaire were provided online via the survey tool *WenJuanXing*, along with a letter fully explaining the research purpose and sincerely inviting voluntary participation. With the help of the school of international education, address links and Quick Response (QR) codes of the survey were shared with all international students taking Chinese courses at the sampling university. Students could access the survey anonymously by scanning the QR codes or clicking the links. It is worth noting that, similar to many other Chinese universities, since the pandemic outbreak, the sampling university had experienced a sharp drop in the number of international students taking Chinese courses, decreasing from over 1000 to roughly 200.

Table 1: Demographic Information

Categories	Items	Frequency	%
Gender	male	26	41%
	female	37	59%
Age	29 or under	61	97%
	30 or above	2	3%
Continent of origin	Asia	45	71%
	Africa	6	10%
	Europe	7	11%
	North America	3	5%
	Oceania	1	2%
	South America	1	2%
Years of Chinese learning	1	43	68%
	2	8	13%
	3	6	10%
	4	4	6%
	5	2	3%
Tuition fee	family	30	48%
	Chinese government scholarship	15	24%
	Chinese university scholarship	8	13%
	other	10	16%
Online courses before	yes	13	21%
	no	50	79%
Forms of online Chinese courses	synchronous	21	33%
	asynchronous	4	6%
	both	38	60%

Participants

Of all international students taking Chinese courses, 63 voluntarily participated in the research. Among the respondents, 26 were male students, and 37 were female students. 97% of them were 29 years old or under, and 3% were 30 or above 30 years old. Most of the participants (71%) were of Asia origin, 10% came from Africa, 11% from Europe, and 9% from North America, Oceania, and South America. 68% were in their first year of Chinese study; 32% had studied Chinese for more than one year. They were financially supported by family (48%), by government and university scholarship (37%), or by other funding resources (16%). 21% of the participants had online learning experiences prior to the COVID-19 pandemic, while 79% had never taken online classes before.

When the research was conducted, four participants were taking asynchronous online Chinese courses only, in which they accessed recorded lectures and prepared learning materials according to their arrangement. Twenty-one students were taking asynchronous online Chinese courses only, which required them to participate in online lectures at a specific time. Thirty-three students had both asynchronous and synchronous online Chinese courses. Demographic profiles of the participants are presented in Table 1.

Face-to-face Interviews

Based on the preliminary analysis of the questionnaire results, semi-structured interviews were conducted to further explore the participants' online Chinese learning experiences. Among all questionnaire respondents, three female and five male students volunteered in the interviews (see Table 2). The interviews were conducted in quiet coffee shops. Each interview lasted approximately 30 minutes to an hour. The interviews were either in English or Chinese, according to the language preference of each interview participant. With the consent of the participants, all interviews were recorded.

Table 2: Participants in the Interview

Participants	Gender	Nationality
C1	M	Lesotho
C2	F	Pakistani
C3	M	Liberian
C4	F	Vietnamese
C5	F	Russian
C6	M	Japanese
C7	M	Moroccan
C8	M	Grenadian

Data Analysis

The questionnaire data were analyzed using SPSS 26.0. Factor loading was calculated to exclude insignificant variables. The reliability and validity of the questionnaire were tested. Means and standard deviations were calculated. Structural equation modeling (SEM) was performed to explore the relationship between OLE, IM and SE. All recorded interviews were transcribed verbatim and analyzed following the thematic analysis method.

RESULTS

Psychometric Property of the Instruments

Factor loading was assessed for each item in the OLE instrument. The results showed that two items of the *access* subscale and one item of the *result* subscale had factor loadings lower than 0.4 and hence, were excluded from the instrument.

Table 3: Reliability and Convergent Validity of the Instruments

Construct	Number of Items	Cronbach's α (>0.7)	Composite Reliability (>0.7)	Average Variance Extracted (>0.5)
Access (ACC)	5	0.821	0.831	0.512
Student Interaction (SI)	3	0.78	0.783	0.549
Teacher Support (TS)	6	0.887	0.893	0.586
Course Organization (CO)	7	0.901	0.901	0.568
IM-Knowledge (IMK)	3	0.84	0.847	0.652
IM-Accomplishment (IMA)	3	0.798	0.828	0.636
IM-Stimulation (IMS)	3	0.793	0.794	0.575
Behavioral Engagement (BE)	3	0.769	0.778	0.55
Emotional Engagement (EE)	3	0.798	0.862	0.679
Cognitive Engagement (CE)	2	0.856	0.858	0.751

The reliability test of the OLE instrument was then performed. The results are presented in Table 3. The total Cronbach α of the instrument on OLE was 0.922 (>0.7). As shown in Table 3, the Cronbach α of each subscale ranged from 0.78 to 0.901. The results revealed a satisfactory internal consistency of the instrument.

The research then performed confirmatory factor analysis to test the convergent validity and discriminant validity of the OLE instrument. All criteria for convergent validity were satisfied: composite reliability of each construct was

over 0.7; all average variance extracted (AVE) exceeded the variance (>0.5), more significant than the variance due to measurement error. The convergent validity test indicated a high consistency across all subscales (see Table 3).

Discriminant validity evaluates the distinction of every dimension. According to Fornell and Larcker (1981), discriminant validity is displayed if the square root of each construct's AVE value exceeds its highest correlation with any other constructs. The results of discriminant validity showed that all constructs of the instrument were not overlapped (see Table 4).

Table 4: Discriminant Validity of the Instruments

	ACC	SI	TS	CO	IMK	IMA	IMS	BE	EE	CE
ACC	0.72									
SI	0.24	0.74								
TS	0.34	0.49	0.766							
CO	0.42	0.53	0.752	0.753						
IMK					0.81					
IMA					0.73	0.80				
IMS					0.72	0.74	0.76			
BE								0.742		
EE								0.579	0.824	
CE								0.732	0.649	0.867

All construct items of the IM instrument satisfied the factor loading test. One item of the SE instrument with factor loading less than 0.4 was excluded.

The total Cronbach α was 0.915 and 0.898 (>0.7) for IM and SE instruments, with every subscale exceeding 0.7, indicating high reliability (Table 3). All criteria for convergent validity were satisfied: all the CR exceeded 0.7 and all AVE over 0.5 (Table 3). As shown in Table 4, the discriminant validity of both instruments also met the requirements.

Students' Perceptions of Online Chinese Learning Environment

As shown in Table 5, participants generally had positive perceptions of their online Chinese learning environment. Specifically, the mean value of teacher support (Mean=4.27) was the highest, indicating that the participants perceived most positively the support that they received from their teachers. The mean value of access (Mean=3.508) ranked the lowest, suggesting that the participants were least likely to perceive that their online Chinese learning was flexible or convenient.

Table 5: Descriptive Statistics of Perceived OLE

Dimensions	Min	Max	Mean	SD
Access	2	5	3.508	0.806
Interaction	1.67	5	3.868	0.707
Teacher Support	3	5	4.27	0.59
Course organization	2.43	5	3.934	0.708

Note: Strongly disagree=1; Disagree=2; Neutral=3; Agree=4; Strongly agree=5

The descriptive statistics were supported by interview findings: Firstly, all interviewees highly appreciated their teachers' understandings of the emerging challenges that they had encountered in online learning, and the personal assistance their teachers offered to support them going through the difficult time. It was also reported that Chinese teachers considered the variation in the students' Chinese proficiency levels and designed their online teaching lessons accordingly, provided adequate learning materials and presented prompt feedback to the questions that the students raised. For instance, the interviewees claimed that:

"*Teachers sent videos according to students' Chinese language proficiency so that they could learn more…*" (C4, female)

"*… due to time difference, I could not participate in the live classes and ask questions directly like other students. My teacher would record the classes for me and warmly answer my questions. I sent my questions to them on Wechat, and they would answer me in time, explaining the grammar and unfamiliar words. So, I did not have much trouble. It's very convenient.*" (C5, female)

"*The care and consideration teachers gave us made us felt very moved…We encountered many problems in online learning, the teachers would always be willing to solve them, listen to us and understand us.*" (C4, female)

Although touched by teachers' heartly devotion of their time and energy to online courses, the interviewees were dissatisfied with the traditional teaching methods, stressing largely the Chinese language's pronunciation, vocabulary, speech patterns, and grammatical structures. Inadequate opportunities to practice communicative and conversational skills would not effectively support Chinese learning in traditional classrooms. In online learning contexts, traditional teaching methods were even more difficult to gain or maintain students' attention, nor effectively elicit their performance. To compensate for the slow progress in online teaching, teachers were reported to assign much heavier homework, which caused more complaints:

"*Normally the teachers explain and ask students questions…*" (C6, male)

"*I think because we take classes online, we have more homework.*" (C8, male)

Moreover, fewer chances of pair work or group discussion in online learning also resulted in inadequate opportunities for the students to interact with peers and support each other in learning:

"*In off-line* classes*, we could talk face-to-face, which is easier to communicate.* [In online classes] *it's difficult to hold group discussions.*" (C1, male)

In fact, since the students were geographically distant from each other, they reported they had great difficulty even in making acquaintance with their classmates:

"*We did not have much contact with our fellow students. We did not know what other students look* like*… we had little communication after class.*" (C4, female)

Furthermore, the interviewees confirmed that time had been saved in online courses, which otherwise had to be spent commuting to campus. Meanwhile, many admitted that the time saved from commuting had not been spent on Chinese learning. Staying with their family and relatives, the students found much time has been spent on chores and socializing:

"*… at home, I have to do housework. Housework takes much time, so I do not have much time to study.*" (C6, male)

As for the access to their online Chinese learning, the difficulties that the interviewee reported also involved poor internet connection, which particularly troubled the students in developing countries:

"*When* the *weather is not good, for example, when it's raining, the internet connection gets bad, and I would lose signals. I could hear the teacher in the beginning, and then I could not hear what they were saying.*" (C4, female)

"*Internet speed is a problem in some countries that are not very developed. Even if you buy the* best *internet, the cables and the infrastructures will bring you this* [slow] *speed of internet.*" (C7, male)

In this research, synchronous Chinese classes were delivered via online meeting software, particularly the *Tencent* meeting. In most cases, teaching had been recorded, and the videos were available online at the university teaching platforms. Teachers also used various online communicating tools, such as *Wechat,* to answer students' questions in- and after class. Lack of familiarity with these online teaching platforms or communicating tools had resulted in various

difficulties in logging in, participating in classes and submitting assignments, which further hindered students' Chinese learning:

"*We weren't settled on one platform. At first, we used Zoom, then Tencent Meeting and Ding Talk… we submitted our homework using Siyuan Classroom or emails… We spent much time learning how to use Rain Classroom and we had much trouble.*" (C1, male)

Students' IM towards Online Chinese Learning

As shown in Table 6, participants generally had high IM towards Chinese learning. The means of each subscale were close, indicating that students were similarly motivated by three types of IM, i.e., IM-knowledge, IM-accomplishment, and IM-stimulation.

Table 6: Descriptive Statistics of IM

Dimensions	Min	Max	Mean	SD
IM	2.333	5	4.092	0.65
IM-knowledge	1.667	5	4.079	0.764
IM-accomplishment	2	5	4.079	0.705
IM-stimulation	2.333	5	4.116	0.683

Note: Strongly disagree=1; Disagree=2; Neutral=3; Agree=4; Strongly agree=5

Table 7: Detailed Mean Scores and SD of Each IM Items

Items	Mean	SD
IMK1	4	0.898
IMK2	4.143	0.82
IMK3	4.095	0.911
IMA1	3.952	0.728
IMA2	4.079	0.938
IMA3	4.206	0.826
IMS1	4.079	0.885
IMS2	4.206	0.699
IMS3	4.063	0.84

Table 7 demonstrates the mean scores of each IM item. The results showed that the participants were motivated in Chinese learning even when all teaching was delivered online under the impact of the pandemic. The most crucial internal motive for their online Chinese learning was "wanting to feel the satisfaction of understanding Chinese" (Mean=4.206, SD=0.826), followed by "the pleasure that

I experience when I learn about Chinese culture" (Mean=4.206, SD=0.699). The least significant internal motive for their online Chinese learning was "the pleasure I experience while surpassing myself in studying Chinese". The results showed that the participants were not learning for the sake of learning. Rather, they were motivated primarily by the needs to understand Chinese culture and to master the Chinese language, while grades could be merely a by-product of becoming competent linguistically and culturally.

Interview findings also suggested the participants' high IM in online Chinese learning. When asked why they chose to study Chinese, all interviewees stressed their passion for Chinese culture, history and the Chinese language. For example, one student stated that:

"*It is very intriguing for me to learn the rich history and culture of China… The Chinese language is also very interesting because the characters are very different from the alphabet we use. That is why I* choose *to learn Chinese.*" (C5, female)

Students' Engagement in Online Chinese Learning

Table 8 and Table 9 present students' self-reported engagement in online Chinese learning. As is shown in the two tables, students generally have high levels of engagement in their online Chinese courses, and they were similarly engaged behaviorally, emotionally and cognitively.

Table 8: Descriptive Statistics of SE

Dimensions	Min	Max	Mean	SD
Behavioral Engagement	2.667	5	4.085	0.677
Emotional Engagement	1	5	4	0.832
Cognitive Engagement	2	5	4.016	0.767

Note: Strongly disagree=1; Disagree=2; Neutral=3; Agree=4; Strongly agree=5

Table 9: Mean Scores and SD of SE Items

Items	Mean	SD
BE1	4.286	0.658
BE2	4	0.88
BE3	3.968	0.897
EE1	3.952	0.974
EE2	3.968	1.015
EE3	4.079	0.829
CE1	4.079	0.809
CE2	3.952	0.831

Interview findings supported the questionnaire results. Specifically, the participants were aware of the reduced chances of practicing the Chinese language without being personally in China. To maximize their exposure to the language, whilst completing the readings recommended by their teachers, the participants studied extra Chinese learning materials, listened to Chinese radio, watched Chinese movies and sought other possible opportunities to practice their uses of Chinese, including volunteering to be interviewed in Chinese in this research:

"*I myself* listen *to Chinese radio every day.*" (C6, male)

"*I would watch* [Chinese movies and video clips] *until 3 or 4 a.m. I do not feel bored. I would* watch *the Chinese subtitles and try to understand so that my listening ability is improved.*" (C4, female)

Impact of Perceived OLE on IM and SE

Structural equation modeling (SEM) was conducted. All criteria of goodness-of-fit indices were fulfilled: χ^2/df =0.827 (<3), RMSEA=0 (<0.10), CFI=1.015 (>0.9), NFI=0.935 (>0.9), NNFI=1.021 (>0.9). Figure 1 presents the standardized regression coefficients for each path. As illustrated in Figure 1, the participants' perceived OLE significantly impacted their IM towards and SE in online Chinese learning. Regarding the impact of IM on SE, no significant impact was found.

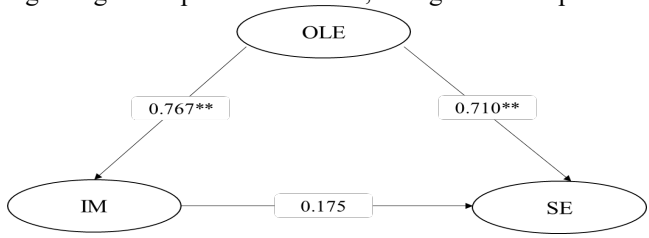

Figure 1: Influences of OLE on IM and SE

Note: * p<0.05 ** p<0.01

DISCUSSION

An emerging number of studies has investigated the impact of the COVID-19 pandemic on higher education (see Ali, 2020; Patricia, 2020). However, being one of the most affected communities during the pandemic, international students were largely overlooked in literature (Sarker et al., 2021). The current study focused on international students who had been studying the Chinese language online since the COVID-19 pandemic. The research was designed to investigate these students' online learning experiences, specifically, their perceptions of the OLE in online Chinese courses, their IM towards and engagement in online Chinese learning.

The first research question examined the students' perceptions of their online Chinese learning environment. The results showed that the participants held generally positive perceptions, with *teacher support* gaining the highest mean score and *access* the lowest. The results indicated that the questionnaire respondents highly appreciated their teachers' emotional and academic support. In contrast, the mean score of *student interaction* was low, indicating that the students were not content with the communication opportunities in the online Chinese courses. Similarly, the comparatively lower mean score of *access* suggested that students were less likely to describe their online Chinese learning environment as flexible or convenient.

The interview findings supported the questionnaire results. The interviewees thought highly of their Chinese teachers as they responded timely to their inquiries and cared for the students' difficulties in online learning. The findings were in line with those of the research stressing the significance of teacher support in supporting student learning in face-to-face traditional learning environment (e.g., Lee et al., 2009). Meanwhile, interviews revealed that Chinese teachers tended to follow traditional teaching methods, and the activities that they had designed were ineffective in OLE. Students' complaints were also concentrated on the increased homework in online courses and reduced interactions with other students. The findings reflected the lack of pedagogical preparation among teachers in emergency online education. In addition, students reported dissatisfactory internet connection and their lack of familiarity with online learning technology, which further affected the effectiveness of their online Chinese learning. These findings were consistent with those emphasizing the importance of internet facilities and technical support in online learning (e.g., Young & Norgard, 2006).

The second and third research questions explored the students' IM and SE towards Chinese learning. The participants reported high IM towards Chinese learning in online contexts. Understanding Chinese culture and mastery of the Chinese language were the most important motives for their learning of the Chinese language. The questionnaire results were supported by interview findings. The majority of the interviewees expressed their admiration for Chinese history and expectations to communicate with local Chinese people, reflecting high IM for Chinese learning. Previously research also reported significant and positive relationship between motivation to know about Chinese culture and international students' Chinese language proficiency (e.g., Yu & Watkins, 2008). In addition, questionnaire results showed higher levels of engagement in their online Chinese courses. Interviews suggested that they were actively engaged in Chinese learning activities after class. Various self-directed learning activities were reported in interviews, including reading extra materials, listening to Chinese radio and watching Chinese movies.

The fourth research question examined the influences of OLE on students' IM towards and engagement in online Chinese learning. The results of SEM showed a statistically significant positive relationship between the respondents' perception of their online Chinese learning environment and their IM towards Chinese learning. It was in tandem with the previous findings in off-line scenarios, such as Hardré et al. (2006) and Chua et al. (2009), in which students' perceptions

of their learning environment were found to be highly correlated to their learning motivation. The results confirmed the influences of learning environments on IM in learning (Ryan & Deci, 2000). The research also found that OLE had a significant impact on SE. It supported the previous studies on the influences of environmental factors on SE in traditional learning context (e. g., Tian et al., 2020) and in OLE (e. g., Chen et al., 2010; Young & Bruce, 2011)

IMPLICATIONS

With the increasing stabilization of the global pandemic, we anticipate that international students will soon return to Chinese campuses. We, however, believe that further strengthening of classroom teaching can be informed by the lessons we have learned over the past months. Based on the data analysis, this research holds the following implications for online learning and teaching of the Chinese language to international students in the post-pandemic era. First, few studies have explored international students' online learning experiences during the COVID-19 pandemic. The current research provides some insight into international students' perceptions of OLE, their IM towards and SE in Chinese language learning during the pandemic. Practically, the research found that international students were less satisfied with the traditional online language teaching methods and the lack of interaction opportunities. They were also likely to be troubled by the lack of familiarity with online learning platforms or communicating tools. To further improve OLE so as to enhance international students' IM towards and SE in online Chinese learning, this research suggests that, following Yukselturk and Bulut (2007), online courses could provide various learning support, including IT training workshops, to better support international students' learning.

In addition, teachers could design their teaching content and class activities to fit OLE better. For example, rich materials (e.g., multimedia applications and videos) that arouse interest in language learning could be integrated into the online courses. Moreover, activities encouraging students' cooperation and communication in online situations should be arranged. Students' social interactions via various communication tools would not only support their language learning, but be crucial for the formation and development of friendship, which are particularly important to reduce anxiety and stress in online learning.

LIMITATIONS AND RECOMMENDATION

The present study has the following limitations. Firstly, the research scope is limited. Participants in this study were international students taking online Chinese courses at a single Chinese university. Future research could focus on international students at different universities located in different areas of China, so as to further explore potentially various measures taken by the institutions in their transition to the emergency online delivery.

In addition, this research only explored intrinsic motivation in Chinese learning. Future research could focus on extrinsic motivation, such as China's economic development, global influences, and career prospects, and investigate

how extrinsic motivation relates to the perceived OLE and the students' engagement in Chinese learning. Moreover, previous research has illuminated significant inter-relationship among learning environment, motivation and engagement (e.g., Eseryel et al., 2014; Tas, 2016; Yildirim, 2012). Future research on international students in China is needed to further explore the association among OLE, motivation, and engagement to effectively support these students' Chinese language learning.

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