A lesson learned and what's next? A correlation study on resilience, self-directed learning and second language motivation in emergency online learning for ESL learners

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ABSTRACT

This study examines resilience, self-directed learning (SDL), and second language (L2) motivation among English learners with varying academic rankings, analyzing their correlations and impact on L2 achievement. A quantitative approach was used, with a questionnaire administered to 66 Chinese secondary ESL students. The research addresses a gap by focusing on high-achieving learners who succeeded despite pandemic-related challenges, suggesting strong resilience. Findings indicate that high L2 achievers demonstrated significantly greater resilience and SDL in specific areas. However, logistic regression analysis identified L2 motivation as the only significant predictor of L2 success. This underscores the critical role motivation plays in language achievement. Based on these insights, the study offers pedagogical recommendations to enhance self-reliance (a component of resilience) and SDL, supporting learners in developing independent learning strategies for sustained academic success.

Keywords: *ESL, L2 achievement, Motivation, Resilience, Self-directed learning, Self-reliance, Independent learning.*

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Highlights of this paper

- This study examines resilience, self-directed learning (SDL), and second language (L2) motivation among Chinese secondary ESL students. It highlights the strong resilience of high achievers who excelled despite pandemic-related challenges. The research emphasizes the importance of these factors in language learning success and provides insights into how students adapt and thrive in challenging circumstances.
- While resilience and SDL contributed to success, logistic regression analysis identified L2 motivation as the only significant predictor of L2 achievement.
- Based on these findings, the study offers pedagogical recommendations to enhance self-reliance and self-directed learning (SDL), supporting learners in developing independent strategies for sustained academic success.

1. INTRODUCTION

The World Bank stated that COVID-19 has disrupted 1.6 billion students worldwide, and in response to the pandemic, many nations implemented some form of emergency online learning for their students. Hong Kong mandated different rounds of emergency online learning in all primary and secondary schools in the region and only allowed the resumption of face-to-face classes in 2022. As the world may again face contagious virus-related illnesses that require social distancing, every school should be prepared for such occurrences.

The effects of emergency online learning and teaching are mostly negative for L2 acquisition. A meta-analysis study found that online teaching and learning negatively affect primary students more severely than secondary students, which may be attributable to younger students lacking self-regulated learning skills and needing more scaffolding from teachers (König & Frey, 2022).

In the ESL context of K-12 immigrants in the US, emergency online learning posed challenges to L2 learning. Meaningful interactions with peers and the employment of strategies to make L2 instructions comprehensible, such as the use of nonverbal cues and physical objects, were not feasible for students to conduct in a virtual setting (Sayer & Braun, 2020). Also, a shift to online learning would require a change in focus for students, from listening and speaking to reading and writing. These skills are understood to take more time to develop in L2 learners and are cultivated through scaffolded face-to-face small group oral interactions (Sayer & Braun, 2020). Furthermore, in a Japanese study involving 208 university students learning English as their L2, Dizon and Thanyawatpokin (2021) showed that these students held negative opinions on online learning due to the pandemic, a sentiment that only slightly improved after completing a school term of online learning.

In the perspective of L2 teachers, there are mixed perceptions of online teaching. In a study of 62 high school and university L2 teachers located around the world, Raffone and Gómez (2022) found that during the first wave of the pandemic, online teaching allowed L2 teachers to be more in touch with their students' use of technology, and online learning conveyed to L2 students that they were in control of their own learning; however, L2 teachers perceived that such an online learning environment could not provide language-in-context or serve as a substitute for real-life environments, which are conducive to L2 learning. Around 58% of L2 teachers said they had to adjust the length of their lessons, mostly reducing lesson times to avoid prolonged screen time for students (Raffone & Gómez, 2022). The shortened period puts pressure on L2 teachers to finish the lesson on time or to reduce the amount of teaching packed into the lessons. Only approximately 58% of the L2 teachers responded that students would only often meet deadlines; the reasons, according to the L2 teachers, for students not always meeting deadlines included disorganized learning methods, exorbitant time spent per course, and assignments not being graded (Raffone & Gómez, 2022). However, it has been shown thast fully online learning does show promise. De Paepe (2018) concluded that wholly online teaching was just as effective as face-to-face teaching for learning Dutch as a second language for adult learners.

2. LITERATURE REVIEW

Hiver and Solarte (2022) defined resilience as an adaptive capability possessed by an individual to recover or even thrive from hardship. The two essential elements of resilience could be boiled down to adversity and recovery. As it was evident that L2 learning was a longitudinal process filled with many hardships (Dörnyei & Ushioda, 2021) resilience could be brought into the study of second language acquisition (Hiver & Solarte, 2022). The underlying theoretical factors that constitute resilience remain undecided, and researchers have employed various theoretical bases to measure resilience in their studies (Danesh & Shahnazari, 2020; Kim & Kim, 2017; Kim, Kim, & Kim, 2019; Subekti, 2021a). SDL was a construct under L2 learner's autonomy where individuals take ownership of their own learning and possess the freedom to make their own choices and decisions (Ushioda, 2014, as cited in) Dörnyei and Ushioda (2021)).

In the Korean context, covering elementary school to university EFL learners, a structural relationship model was conducted for resilience, L2 motivation, and L2 proficiency, absent of SDL. Kim and Kim (2017) and Kim et al. (2019) concluded that resilience positively influenced L2 proficiency, either directly or through L2 motivation as a mediator. However, in the Iranian EFL learner context, Danesh and Shahnazari (2020) concluded that L2 motivation positively influenced L2 proficiency, either directly or through resilience as a mediator. Subekti (2021b) brought SDL into the fray by finding that resilience could predict 27.9% of the variance in SDL in the Indonesian context, covering university students studying English for Academic Purposes (EAP). It was also observed in the studies mentioned above that they had only assumed the participants to have experienced L2 learning adversity and to have overcome it. Relying on the well-documented across-the-board learning hardships experienced by secondary students during the emergency online learning brought about by the pandemic, the researcher intended to recruit high L2 learning achievers for this study since they could only have overcome such L2 learning adversity to attain high L2 achievement. This study aimed to bridge the gap in studying resilience, SDL, and L2 motivation together. An additional importance of this study was the fact that many researchers have suggested that resilience and SDL can be developed and enhanced, calling for educators to take up this responsibility (Danesh & Shahnazari, 2020; Kim, Kim, & Kim, 2017; Kim et al., 2019; Subekti, 2021b; Yun, Hiver, & Al-Hoorie, 2018). The suggestion of pragmatic pedagogical implications by studying these topics was another driving force for this study.

The research questions of this study were the following:

(i) What are the differences in resilience, SDL, and L2 motivation between students who performed well in their grade in the English subject after experiencing L2 learning adversity caused by the pandemic and those who did not?

(ii) What is the correlational relationship between resilience, L2 self-directed learning, and L2 motivation?

3. METHODOLOGY

This would enhance the clarity and transparency of the study and provide valuable context for understanding the participant demographics. To investigate the resilience, SDL, and L2 motivation of students and the correlational relationships among them, a quantitative study was conducted, and the instrument for data collection was an online questionnaire, whose invitation had been sent to 422 secondary schools.

3.1. Participants

Three secondary schools (two Band 1 and one Band 3) out of 422 schools responded to email invitations sent for this study. One of the three schools involved in this study was willing to reveal its school name, which was Delia Memorial School (Hip Wo No. 2 College), and the other two schools preferred to retain their privacy. The schools

chosen to receive email invitations (accompanied by the Google Form links to the online questionnaires) were conveniently sampled. Secondary 4 and 5 students who ranked within the top 10% of the English subject in their grade and those who ranked within the bottom 10% were the target participants.

These two grades were chosen because students in these grades would be near the public examination, so they would be incentivized to learn L2, given the well-documented heartbreaks felt by senior form students for poor performances in public exams (Wong, 2018) and would have experienced the significant adversity of approximately two years of intermittent emergency online learning (Education Bureau, 2022). Resilience is generally defined as demonstrating positive adaptation after experiencing trauma or significant adversity (Simons, Beaumont, & Holland, 2018). Students who were in the top 10% rank indicated that, despite learning adversity in L2 due to the emergency online learning brought about by the pandemic, they still achieved notable progress in L2 learning. The focus of this study was not solely on identifying students who had objectively attained or maintained high L2 proficiency despite COVID-19 hardships (who would most likely be considered top students from band 1 secondary schools only), but rather on identifying students demonstrating resilience by advancing in L2 learning relative to their initial proficiency. Any advancement in L2 learning, regardless of its magnitude, in such a challenging environment, would be regarded as positive adaptation. To compare with students in the top 10% rank, it was reasonable to consider students who did not exhibit resilience, as evidenced by their low ranking in their grade in the English subject, specifically those within the bottom 10% in their grade in English.

The students who fall within the top 10% or bottom 10% rank were identified and selected by their teachers. Sixty-nine students participated in this study, of whom three were excluded due to non-usable responses. Consequently, a total of 66 secondary four or five students in Hong Kong were included in the analysis of this study. The background attributes of the 66 participants are displayed in Table 1.

Table 1. Distribution of the participants in various attributes.

Gender	**Male (44%)**			**Female (56%)**		
Age	15 (21%)	16 (20%)	17 (34%)	18 and above (15%)		
Grade	Secondary four (53%)			Secondary five (47%)		
L2 English ranking achievement	Top 10% rank (55%)			Bottom 10% rank (45%)		
L1	Chinese	Nepali	Arabic	Punjabi	Tagalog	Thai
Number of participants	(60)	(2)	(1)	(1)	(1)	(1)

3.2. Material

The online questionnaires consisted of four parts. The first part included questions such as gender, age, current grade, and relevance to participation. The second, third, and fourth parts comprised 12 questions on learners' resilience, 15 on learners' SDL, and 10 on learners' L2 motivation, respectively. The 12-item resilience scale and 15-item SDL scale were adapted by redesigning to further emphasize the experience of emergency online learning due to the pandemic from the Subekti (2021a) study, which used the items to identify the level of resilience and SDL in Indonesian university students engaged in online learning during the pandemic. Subekti (2021a) had adapted the items from the 25-item Resilience Scale (RS) for nursing, used by Wagnild and Young (1993) and from the Self-Directed Learning Skills Scale (SDLS) used by Ayyildiz and Tarhan (2015). The 10-item L2 motivation scale was adapted by revising it to a 5-point Likert scale for each item and replacing references to private tutoring and public schooling with the participants' schools, from Kim (2011) who adopted from Lamb (2007) and used the items to

assess the effects of private tutoring and public schooling on L2 motivation in Korean elementary school students. By the design of the scales, the summation of the levels rated for the items in the resilience scale and SDL scale for each case would give the level of resilience and SDL of the corresponding learner, respectively. However, for the L2 motivation scale, only the summation of the levels rated for items 1 to 5 for each case would be the level of L2 motivation of the corresponding learner. The themes for the 10 items of the L2 motivation scale were as follows (modified from Kim (2011)).

1) Learner's gratification with their English progress (Items 1 and 3).
2) Learner's expectation of ultimate English success (Item 2).
3) Learner's perception of English importance (Items 4 and 5).
4) Learner's instrumental motivation (Item 6).
5) Learner's intrinsic motivation (Item 7).
6) Learner's integrative motivation (Item 8).
7) Learner's extrinsic motivation (Parental) (Item 9).
8) Learner's extrinsic motivation (Academia) (Item 10).

Items 6 and 8 Gardner (1985) and Gardner (2001) items 7, 9 and 10 Deci and Ryan (1985) refer to the type of L2 motivation construct that operates in the learner (as cited in Kim (2011)) and not on the level of L2 motivation (items 1 to 5). The online questionnaire used in this study was bilingually translated (Traditional Chinese and English) and reviewed by a 17-year in-service teacher specializing in Chinese and a postgraduate student enrolled in a Master of Arts TESOL program. Before sending invitations to secondary schools and distributing the online questionnaire link, the questionnaire was piloted by 10 Hong Kong secondary students in the targeted grade of this study.

Two items in the SDL scale for this study were reverse-scored, meaning a "strongly agree" response in those items indicated low SDL. The items in the resilience scale, SDL scale, and L2 motivation scale used in this study demonstrated (i) high internal consistency (reliability), with Cronbach's alphas of 0.945, 0.880, and 0.917, respectively; and (ii) validity, based on their use in previous studies conducted by Subekti (2021a) and Kim (2011) respectively.

3.3. Ethical Consideration

Following ethical principles, explicit or implied informed consent from the schools and parents were received (Creswell, 2014; Groom & Littlemore, 2011) the researcher of this study had no access to the student participants since the Google Form links to the online questionnaires were given by the students' teachers directly; the teachers decided which of their students were in the top 10% and bottom 10% without informing the students of their ranking achievement; and the identities of the schools and participants were not revealed in this study. Furthermore, the low turnout (0.71%) of school participation demonstrated the voluntary nature of participation in this study (Israel & Hay, 2006).

An ethical review application was approved by the Ethical Committee of the Education University of Hong Kong on 22 March 2022.

3.4. Data Analysis

The data collected from the Google Form was modified in a Microsoft Excel file, which was then transferred to SPSS 27. For the purpose of answering research question one, tests of normality were conducted for each item of the resilience scale, SDL scale, and L2 motivation scale, separately for the L2 learners who were in the top 10% and

bottom 10% ranks. The corresponding significant value of the Shapiro-Wilk test for each item of the three scales was less than 0.05 (see Appendix 1), which meant the data collected for the three scales were not normally distributed. Because of this, a series of Mann-Whitney U tests was then conducted to compare the top 10% rank L2 learners and the bottom 10% rank L2 learners in each item in the resilience scale, SDL scale, and L2 motivation scale. It was not reasonable to find that the data collected for resilience, SDL, and L2 motivation were not normally distributed because the participants of this study were at either end of the L2 learning success spectrum. If L2 learners who had moderate L2 learning success in the spectrum had been invited to participate in this study, then the data collected would better reflect the population, which would have data that were normally distributed.

For the purpose of answering research question two, the Spearman correlation and logistic regression tests were conducted for resilience, SDL, and L2 motivation. To prepare the data for these tests, the levels of resilience, SDL, and L2 motivation for each participant needed to be determined. In this context, for each participant, his or her rank levels answered for each item in the resilience scale and the SDL scale were summed to determine the level of resilience and SDL, respectively, for that particular participant. Regarding the level of L2 motivation, only the participants' rank levels answered for items one to five in the L2 motivation scale were summed. Summing items six to ten along with items one to five of the L2 motivation scale would be over-counting, since items six to ten merely refer to different constructs of L2 motivation (instrumental, intrinsic, integrative, extrinsic-parental, and extrinsic-academic) and not the level of L2 motivation.

4. RESULTS

4.1. The Difference in Resilience Level between top 10% Rank L2 Learners and Bottom 10% Rank L2 Learners

The theoretical factors underlying resilience and their corresponding items in the resilience scale are as follows: self-reliance (items 2 and 3); independence (item 4); determination (items 1, 7, 10); invincibility (item 12); mastery (item 8); resourcefulness (items 5 and 9); and perseverance (items 6 and 11) From Table 2, save for items 2 and 3 (self-reliance), there were no significant differences in the items of the resilience scale between the top 10% rank L2 learners and the bottom 10% rank L2 learners. The means of all the items in the top 10% rank were expectedly greater than those in the bottom 10% rank. However, contrary to expectations, the mean for item 6 was 3.64 for the top 10% rank L2 learners and 3.70 for the bottom 10% rank L2 learners (see Table 2).'

4.2. The Difference in SDL Level between Top 10% Rank L2 Learners and Bottom 10% Rank L2 Learners

Referring to Table 3, there were significant differences for items 1, 3, 6, 9, 11, 14, and 15 in the SDL scale, where the top 10% rank L2 learners had higher means than the bottom 10% rank L2 learners. Unexpectedly, despite their insignificant difference for item 4 (referring to the motivation and self-confidence factor, see Table 4) and item 13 (referring to the ability to manage information factor, see Table 4), Bottom 10% Rank L2 learners had higher means than Top 10% Rank L2 learners (see Table 3).

4.3. Observed Divergences in Mann-Whitney U Test Results for Items under a Single Factor of SDL

The 15-item SDL scale comprises six factors of SDL, namely, (i) motivation and self-confidence, (ii) learning responsibility, ability to plan learning, (iii) assessment of tsshe learning process, (iv) attitudes towards learning, and (v) ability to manage information (Ayyildiz & Tarhan, 2015). A summary of these factors and the corresponding items in the SDL scale, as well as the results of the Mann-Whitney U tests, can be found in Table 4.

Table 2. Recorded the level of resilience of the top 10% rank L2 learners and the bottom 10% rank L2 learners.

Item #	Mean (SD) (*N* = 66)				
	Top 10% rank L2 learners (N = 36)		**Bottom 10% rank L2 learners (*N = 30*)**		**Mann-Whitney U test significance (p < 0.050)**
Throughout emergency online learning in this COVID-19 pandemic, …					
Item 1: … when I make plans, I follow through with them. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.33	(0.178)	3.03	(0.148)	0.190
Item 2: … I usually manage one way or another. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.86	(0.114)	3.40	(0.177)	0.036
Item 3: … I am able to depend on myself more than anyone else. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.83	(0.129)	3.20	(0.169)	0.004
Item 4: … I can be on my own if I have to. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	4.22	(0.098)	3.90	(0.162)	0.142
Item 5: … I feel that I can handle many things at a time. (1 = strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.25	(0.175)	3.10	(0.194)	0.623
Item 6: … I can get through difficult times because I have experienced difficulty before. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.64	(0.165)	3.70	(0.145)	0.939
Item 7: … I am self-disciplined. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	2.94	(0.203)	2.40	(0.156)	0.056
Item 8: … my belief in myself gets me through hard times. (1 = strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.56	(0.212)	3.40	(0.156)	0.293
Item 9: … in an emergency, I am someone people can generally rely on. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.75	(0.156)	3.50	(0.171)	0.275
Item 10: … sometimes I make myself do things whether I want to or not. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.64	(0.144)	3.57	(0.141)	0.525

Item 11: … when I am in a difficult situation, I can always find my way out of it. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.56	(0.146)	3.43	(0.124)	0.332
Item 12: … I have enough energy to do what I have to do. (1 = strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.28	(0.167)	3.20	(0.217)	0.676

Table 3. Recorded level of SDL of Top 10% Rank L2 learners and Bottom 10% Rank L2 learners.

Item #	**Mean (SD) (N = 66)**				**Mann- Whitney U test significance (p < .050)**
	Top 10% rank L2 learners (N = 36)		Bottom 10% rank L2 learners (N = 30)		
Throughout emergency online learning of English in my school during the COVID-19 pandemic, …					
Item 1: … I believe that I can learn English, no matter how complicated it is. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	4.06	(0.154)	2.50	(0.164)	0.000
Item 2: … I should use the internet for learning purposes, instead of having a good time. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.11	(0.177)	3.00	(0.144)	0.342
Item 3: … I organise my study hours by making plans. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.22	(0.192)	2.60	(0.183)	0.019
Item 4: … if I am motivated for learning, any distracting factors do not sidetrack me from my objective. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.28	(0.198)	3.30	(0.187)	0.957
Item 5: … after each learning process, I think about what I should do to be more successful. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.53	(0.167)	3.30	(0.137)	0.206
Item 6: … I hold myself responsible for my English learning. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	4.22	(0.113)	3.57	(0.164)	0.001
Item 7: … I must know clearly the objectives of the new subject to be learnt. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.81	(0.131)	3.70	(0.119)	0.332

Item 8: … generally, I try to finish my homework AT THE LAST MOMENT.[Note 1] (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	2.61	(0.204)	2.10	(0.154)	0.115
Item 9: … I believe that active participation in the learning process in English class ensures better learning results. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.75	(0.171)	3.23	(0.171)	0.014
Item 10: … to successfully learn a new learning material, I have to learn the previous relevant learning materials. (1 = Strongly disagree; 2 = Disagree; 3 =Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.72	(0.147)	3.60	(0.123)	0.373
Item 11: … Instead of feeling despair when I encounter difficult things in English class, I think about what I should do. (1 = strongly disagree; 2 = disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.92	(0.140)	3.20	(0.176)	0.002
Item 12: … while planning a new day, I prioritise time for learning. (1 = strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.00	(0.207)	2.87	(0.196)	0.563
Item 13: … I can produce alternative methods to reach solutions when I solve a problem. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.67	(0.149)	3.70	(0.128)	0.938
Item 14: … I believe in the importance of playing an active role in English learning. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	4.00	(0.113)	3.30	(0.199)	0.003
Item 15: … the important thing is NOT what I learn in English class, but whether I have got a passing grade. Note 1 (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.31	(0.173)	2.40	(0.223)	0.002

Note: Items 8 and 15 have been reverse-scored.

Table 4. Divergence in Mann-Whitney U test results within factors of the SDL.

Factors of SDL / Item number in the SDL scale used in this study	Motivation and self-confidence	Learning responsibility	Ability to plan learning	Assessment of the learning process	Attitudes towards learning	Ability to manage information
1	Reject					
2		Retain				
3			Reject			
4	Retain					
5				Retain		
6		Reject				
7			Retain			
8			Retain			
9				Reject		
10		Retain				
11	Reject					
12					Retain	
13						Retain
14					Reject	
15					Reject	
Conclusion for rejection or retention of the null hypothesis for that factor	Indeterminate due to divergence of Mann-Whitney U test results in the corresponding items.	Indeterminate due to divergence of Mann-Whitney U test results in the corresponding items.	Indeterminate due to divergence of Mann-Whitney U test results in the corresponding items.	Indeterminate due to divergence of Mann-Whitney U test results in the corresponding items.	Indeterminate due to divergence of Mann-Whitney U test results in the corresponding items.	Retainment

Note: "Reject" meant rejecting the null hypothesis that the item was significantly the same across the top 10% rank L2 learners and the bottom 10% rank L2 learners.
"Retain" meant retaining the null hypothesis that the item was significantly the same across the top 10% rank L2 learners and the bottom 10% rank L2 learners.

From Table 4, it was apparent that, save for the factor of ability to manage information, all the other factors of SDL exhibited divergences in the Mann-Whitney U test results for their corresponding items. For completeness, regarding the SDL factor of the ability to manage information, it was found that there was no significant difference between the Top 10% Rank L2 learners and the Bottom 10% Rank L2 learners.

4.4. The Difference in L2 Motivation Level between Top 10% Rank L2 Learners and Bottom 10% Rank L2 Learners

As expected, the means for (i) the satisfaction with progress in L2 (item 1), (ii) the expectation of ultimate success in learning L2 in one's school (item 2), (iii) satisfaction with L2 teaching provided by one's school (item 3), (iv) the importance placed on learning L2 (items 4 and 5), and (v) instrumental (item 6), intrinsic (item 7), and integrative (item 8) constructs were significantly higher in the Top 10% Rank L2 learners. Interestingly, there was no difference in means for the extrinsic construct (items 9 and 10) of L2 motivation for the two types of L2 learners (see Table 5).

Table 5. Recorded level of L2 motivation of Top 10% Rank L2 learners and Bottom 10% Rank L2 learners.

Item #	**Mean (SD)**				**Mann-Whitney U test significance ($p < .050$)**
	Top 10% rank L2 learners (N = 36)		Bottom 10% rank L2 learners (N = 30)		
Item 1: I am satisfied with my progress in English thus far. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.72	(0.152)	2.40	(0.183)	0.000
Item 2: I think I can eventually speak English fluently and understand it well if I learn English at my school. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.47	(0.171)	2.60	(0.195)	0.002
Item 3: I am satisfied with the English learning experience provided by my school. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.83	(0.152)	3.07	(0.197)	0.001
Item 4: English is important to me. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = strongly agree)	4.50	(0.116)	3.07	(0.209)	0.000
Item 5: English is more important compared to other school subjects. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.75	(0.161)	2.90	(0.241)	0.007
Item 6: English is important because I need it for my career in the future. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	4.28	(0.117)	3.40	(0.212)	0.001
Item 7: English is important because I enjoy learning English. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.64	(0.179)	2.03	(0.176)	0.000
Item 8: English is important because it helps me meet foreigners and learn about other countries. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	4.22	(0.113)	3.40	(0.189)	0.001
Item 9: English is important because my parents encourage me to learn English. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.14	(0.188)	2.70	(0.226)	0.139
Item 10: English is important because it is a compulsory school subject. (1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree)	3.61	(0.184)	3.50	(0.234)	0.831

4.5. Correlational Relationship Amongst L2 Motivation, SDL and Resilience

As could be read from Tables 6, 7 and 8, the L2 motivation & SDL pair had the highest correlation, followed by the SDL & resilience pair, and then the resilience & L2 motivation pair. All of the correlations mentioned were significant.

Table 6. Correlation between resilience and SDL.

Resilience		**SDL**
	Spearman's rho	0.607 significance (2-tailed)
	Significance (2-tailed)	0.000
	N	66

Note: Correlation was significant at the 0.01 level (2-tailed).

Table 7. Correlation between resilience and L2 motivation.

Resilience		**L2 motivation**
	Spearman's rho	0.497
	Significance (2-tailed)	0.000
	N	66

Note: Correlation was significant at the 0.01 level (2-tailed).

Table 8. Correlation between SDL and L2 motivation.

SDL		**L2 motivation**
	Spearman's rho	0.655
	Significance (2-tailed)	0.000
	N	66

Note: Correlation was significant at the 0.01 level (2-tailed).

4.6. Only L2 Motivation and a Constant were Significant Predictors of English Ranking Achievement

To run the logistic regression model, the internal values for the top 10% achievement and bottom 10% achievement were set at 0 and 1, respectively, and the predictors were set as resilience, SDL, and L2 motivation. The Chi-square, degrees of freedom, and significance level for the model were 30.108, 3, and .000, respectively. The significance value being lower than .05 indicated that the model was a good fit.

Despite the overall percentage of correct for the logistic regression model was high at 77.3% (see Table 10), the only significant predictors for ranking achievement (either top 10% or bottom 10%) of an L2 learner were L2 motivation (with a significance level of less than .05) and the constant, excluding resilience and SDL (see Table 9). An increase in L2 motivation would result in moving away from the bottom 10% ranking, as indicated by the B coefficient of .423. Despite the significance value being greater than .05 for resilience, it is noteworthy that the B coefficient of resilience in this model was .079, indicating a movement toward the bottom 10% ranking with a positive increase in resilience.

Table 9. Classification table for prediction percentage.

		Predicted		
	Observed	**Top 10%**	**Bottom 10%**	**Percentage correct**
	Top 10%	29	7	80.6
	Bottom 10%	8	22	73.3
Overall percentage				77.3

Note: The cut value is 0.500

Table 10. Binary logistic regression with English ranking achievement (either top 10% or bottom 10%) as the dependent variable.

	B	df	Significance	Exp(B)	95% C.I. for Exp(B)	
Resilience	0.079	1	0.224	1.082	0.953	1.228
SDL	-0.059	1	0.319	0.943	0.839	1.059
L2 motivation	-0.423	1	0.001	0.655	0.514	0.834
Constant	6.696	1	0.003	809.115	-	-

Note: The predictors are constant, resilience, SDL and L2 motivation.

5. DISCUSSION

5.1. Relating to Resilience Differences

5.1.1. Homogenising L2 Learners by the Pandemic

Although by purposively creating a significant gap in the participants of this study by requiring only the top 10% and bottom 10% rank students to respond to the questionnaire, it was hoped that every item in the resilience scale, as well as in the SDL scale and the L2 motivation scale, would clearly show significant differences in means between the L2 learners, with the top 10% rank L2 learners having higher means. This was not the case in the results for the resilience scale (see Table 2) and the SDL scale (see Table 3). A reasonable explanation would be that the pandemic may have, to a certain extent, homogenized cognition, behavior, or reactions in L2 learners, blurring differences that used to be clearly delineated in pre-COVID-19 days. For example, as Sayer and Braun (2020) pointed out that online learning forced all L2 learners to prioritize focus on reading and writing. Hartshorn and McMurry (2020) found 11% of the participants who were ESL learners in the United States viewed L2 learning with increased importance, with some of them sharing the consensus of feeling regret for not putting effort into learning L2 before the pandemic. Such homogenization could be the reason that not all items in the resilience scale, SDL scale, and L2 motivation scale resulted in significant differences between the two L2 learner types.

5.1.2. Disconnection with Peers and Teachers Prompted Self-Reliance

Items 2 and 3 refer to the underlying factor of self-reliance. The emergency online learning most notably disconnected L2 learners from what once was timely and readily available face-to-face communication with peers or teachers for help with L2 learning difficulties. In order to thrive in L2 learning under such adversity, the top 10% of L2 learners had to muster self-reliance skills in the face of such disconnection from the outside world, resulting in a significant difference in engaging such skills compared to the bottom 10% of L2 learners.

5.1.3. De-Sensitised Fear of Facing Difficult Times

Although the mean for item 6 was not significantly different, the mean (3.70) for the bottom 10% rank L2 learners was higher than its counterpart (3.64). It could be understood that low L2 achievers are likely to experience more difficulty, related to L2 learning or otherwise, reflected as often receiving low L2 assessment marks. This constant bombardment of being assessed as low performing may desensitize low L2 achievers from fear of facing difficulty, which could help them cope or get through difficult times better than their high L2 achiever counterparts.

5.2. Relating to SDL Differences

For the general explanation of reasons, there was no significant difference in means for items in the SDL scale. Please refer to the explanation provided in the section titled "Discussion - Relating to resilience differences - Homogenising L2 learners by the pandemic" in this paper.

5.2.1. Unfamiliarity of Predominately Learning L2 by the Computer and the Inadvertent Training Provided From Facing Many Difficulties

The means in items 4 and 13, despite not showing significant differences, were scored higher in the bottom 10% rank L2 learners than in the top 10% rank L2 learners. Emergency online learning forced all L2 learners to learn predominantly by the computer, which would not have been the case for top 10% rank L2 learners (or high L2 achievers). High L2 achievers were known to immerse themselves in an English-communicating environment to facilitate inductive L2 learning, such as conversing in L2 while completing daily tasks, seeking entertainment and interests involving L2, and engaging in other activities with the purpose of English immersion. The social distancing disallowed these high L2 achievers from living the life of English immersion and they had to resort to learning via the computer. With the unfamiliarity of having to predominantly learn L2 through the computer and the many distractions that an internet-connected computer could bring, it would explain the lower mean score for item 4 by the top 10% rank L2 learners in item 4.

Referring back to the explanation provided in the section titled "Discussion Relating to resilience differences - De-sensitised fear of facing difficult times" in this paper, it would be reasonable to expect the bottom 10% L2 learners to often face many L2 difficulties. Such a high frequency of facing L2 difficulties would inevitably train these L2 learners to conjure up alternative ways to solve problems, resulting in a higher mean score for the bottom 10% L2 learners in item 13.

5.2.2. The Emergency Online Learning Adversity Contributed to the Divergences in Mann-Whitney U Test Results Amongst Items Under the Same Factor of SDL

The overall Cronbach's alpha for all items in the SDL scale, calculated from the pilot questionnaire for this study, was 0.880. Ayyildiz and Tarhan (2015) calculated the Cronbach's alpha for each group of items under each SDL factor. The calculated values were also sufficient, being (i) 0.750 for motivation and self-confidence; (ii) 0.776 for learning responsibility; (iii) 0.746 for the ability to plan learning; (iv) 0.870 for the assessment of the learning process; and (v) 0.725 for attitudes towards learning (Ayyildiz & Tarhan, 2015). These Cronbach's alpha values suggest that the relevant items are sufficiently reliable to refer to the same factor, and this further indicates that it is reasonable to expect these relevant items to behave similarly. However, from the results illustrated in Table 4, divergence in the Mann-Whitney U test results was observed for items under the same SDL factor. For example, for the SDL factor of the ability to plan learning, items 3, 7, and 8 had different Mann-Whitney U test results. A possible reason for these divergences is that the extreme change in the L2 learning medium brought about by the pandemic was highly intrusive (He et al., 2021). It caused L2 learners to think, behave, or react differently to even slightly different circumstances.

5.3. Relating to L2 Motivation Differences

5.3.1. Pragmatic Hong Kong Parents and the HKDSE were Reasons for the Insignificant Differences

It was expected to see that the means for most of the items in the L2 motivation scale were significantly higher in the top 10% rank L2 learners. Since it was well-proven from Gardner and Lambert (1959) motivation theory suggests that L2 motivation positively influences L2 proficiency (as cited in Dizon and Thanyawatpokin (2021)), a L2 learner ranking in the top 10% was likely to hold high levels of L2 motivation, compared to his/her counterpart.

As in most parts of the world, parents in Hong Kong view English as important to most aspects (economic, cultural, and social) of their children's future (Li, 2002; Tung, Lam, & Tsang, 1997) so any pragmatic parent would encourage their children to learn English. This would explain why there was no significant difference in the mean

for item 9 since parents, across the board in Hong Kong, would encourage their children to learn English. The insignificant difference in mean for item 10 was explained by the fact that, for any student pursuing to take the HKDSE, he/she must take four compulsory English papers. Such compulsiveness of the English papers was not difficult to understand, for it acted equally as a motivation for all participants of this study to learn English.

5.4. Relating to Correlation Amongst Resilience, SDL and L2 Motivation

5.4.1. Apparent Overlap of Factors Underlying Resilience, SDL and L2 Motivation Could Have Contributed to the High Correlation Values Amongst Them

The high intercorrelation of L2 motivation, SDL, and resilience may be due to the apparent overlap of factors underlying the SDL scale, resilience scale, and L2 motivation scale. For example, factors of resourcefulness and invincibility under the resilience scale (Wagnild & Young, 1993), factors of ability to manage information, motivation, and self-confidence under the SDL scale (Ayyildiz & Tarhan, 2015) and the constructs of instrumental/intrinsic/integrative/extrinsic motivation under the L2 motivation scale seem to have some overlap. The non-consensus in the research field on the factors underlying resilience also posed problems for fruitful analysis. A summary of the similarities and differences of underlying factors is generally summarized in Table 11 below. It would be warranted for the field to explore further or to conduct structural equation modeling of these three elements.

Table 11. A summary of current possible inconsistencies and consistencies on theoretical factors underlying resilience.

	Subekti (2021a) adapted from Wagnild and Young (1993)	Danesh and Shahnazari (2020)	Kim et al. (2019)	Kim and Kim (2017)	Kim et al. (2017)	
Underlying theoretical factors in resilience	-	-	Spiritual influence	-	-	-
	-	-	Trust in one's instincts	-	-	-
	-	-	Positive acceptance of change	Optimism	Perceived happiness	Realisticoptimism
	Mastery	Mastery	Personal competence	-	-	Strategic competence
	-	-	Control	-	Self-regulation	Self-composure
	-	-	-	Metacognitive adaptation	-	Metacognitive adaptation
	Perseverance	Perseverance	-	Perseverance	Persistence	-
	Resourcefulness	Resourcefulness	-	Communicative efficacy	Sociability	Communicative efficacy
	-	-	-	-	Empathy	-
	-	-	-	-		Life satisfaction
	Invincibility	Invincibility	-	-	-	-
	Self-reliance	Self-reliance	-	-	-	-
	Determination	Determination	-	-	-	-
	Independence	Independence	-	-	-	-

5.4.2. Research Supporting the Logistic Regression Model

Despite the logistic regression model in this study showing the absence of resilience and SDL as significant predictors of ranking achievement in English, this finding could be supported by two structural equation modeling studies involving resilience and L2 motivation in the Korean EFL context for secondary school and university students. Kim and Kim (2017) and Kim et al. (2019) found that resilience had a direct, stronger impact on L2 motivation than on L2 proficiency, and that resilience exerted influence on L2 proficiency through the mediation of L2 motivation. Aspects of SDL were reflected in those Korean studies as positive indicators of resilience rather than exerting any direct influence on L2 proficiency (Kim & Kim, 2017; Kim et al., 2019). Furthermore, the Subekti (2021b) study found in the Indonesian context that resilience was not a predictor of grades in learners for English for EAP, and SDL was not a predictor of ultimate achievement in EAP either.

6. CONCLUSIONS AND PEDAGOGICAL IMPLICATIONS

Only certain items in the resilience scale, the SDL scale, and the L2 motivation scale scored significantly higher means for the top 10% rank L2 learners. The self-reliance factor under the resilience scale had a significantly higher mean score in the top 10% rank L2 learners than in the bottom 10% rank L2 learners. Most of the significantly different items in the SDL scale created a divergent phenomenon of simultaneously accepting and rejecting the null hypothesis in the t-test within an underlying factor of SDL. These factors were motivation and self-confidence, learning responsibility, ability to plan learning, assessment of the learning process, and attitudes towards learning. No bottom 10% rank L2 learners scored significantly higher means for any of the items in the three scales. The L2 motivation and SDL pair had the highest correlation, followed by the SDL and resilience pair, and then the resilience and L2 motivation pair. Despite the logistic regression model, with the dependent variable set as English ranking achievement and the predictors set as resilience, SDL, and L2 motivation, having a 77.3% correct percentage, the only significant factor was L2 motivation.

From the identification of significant differences in various items on the resilience scale and SDL scale, it appears beneficial for government or in-service teachers to develop strategies to positively influence L2 learners to enhance self-reliance. From the study of Danesh and Shahnazari (2020) that had identified resilience as directly positively contributing to L2 proficiency, the skill of self-reliance under resilience could be trained on L2 learners by giving them tasks with a surmountable difficulty along with self-help road maps. Yun et al. (2018) also suggested building buoyancy, the ability to overcome everyday minuscule problems, as a precursor to building resilience. Teachers could design and assign daily quick worksheets with completion rewards. Furthermore, the study of Cho and Ma (2015) found there was a positive correlation between SDL and English proficiency. As suggested in that study, in-service teachers could promote L2 learners' level of self-directedness by having learners complete persuasive discourse, such as reflective essays, persuasive communication, and group discussions" (Cho & Ma, 2015).

7. LIMITATIONS AND FURTHER STUDY

The low participation rate of schools (3 out of 422) raised concerns regarding the validity of this study. The limited participation impacted the normality of the data collected, thereby affecting their analysis. A possible reason for the low turnout was that the data collection period coincided with the summer vacation. Journals from L2 learners and interviews with participants could contribute to triangulating the reasons behind unexpected results, such as item 6 of the resilience scale and items 4 and 13 of the SDL scale. Further research should be conducted to explore the logistic regression model for L2 learning achievement, resilience, SDL, and L2 motivation, particularly

to understand why the B coefficients for resilience (.079) and L2 motivation (-.423) are as they are, despite the Spearman's rho of .497 between resilience and L2 motivation.

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Appendix 1. Captures in SPSS of the Shapiro-Wilk and the Kolmogorov-Smimov tests for each item of the resilience scale, SDL scale and L2 motivation scale.

	Resilience scale						
	Top or Bottom	**Statistic**	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
...When I make plans, I follow through with them.	Bottom 1	0.250	30	0.000	0.845	30	0.000
	Top 10	0.261	36	0.000	0.881	36	0.001
...I usually manage one way or another.	Bottom 1	0.299	30	0.000	0.857	30	0.001
	Top 10	0.386	36	0.000	0.741	36	0.000
...I am able to depend on myself more than anyone else.	Bottom 1	0.219	30	0.001	0.904	30	0.011
	Top 10	0.307	36	0.000	0.839	36	0.000
...I can be on my own if I have to.	Bottom 1	0.245	30	0.000	0.863	30	0.001
	Top 10	0.341	36	0.000	0.752	36	0.000
...I feel that I can handle many things at a time.	Bottom 1	0.229	30	0.000	0.901	30	0.009
	Top 10	0.184	36	0.003	0.915	36	0.009
...I can get through difficult times because I have experienced	Bottom 1	0.280	30	0.000	0.859	30	0.001
	Top 10	0.309	36	0.000	0.830	36	0.000

difficulty before.							
...I am self-disciplined.	Bottom 1	0.259	30	0.000	0.863	30	0.001
	Top 10	0.196	36	0.001	0.907	36	0.005
...My belief in myself gets me through hard times.	Bottom 1	0.247	30	0.000	0.876	30	0.002
	Top 10	0.275	36	0.000	0.859	36	0.000
...In an emergency, I am someone people can generally rely on.	Bottom 1	0.203	30	0.003	0.887	30	0.004
	Top 10	0.244	36	0.000	0.872	36	0.001
...Sometimes I make myself do things whether I want to or not.	Bottom 1	0.246	30	0.000	0.860	30	0.001
	Top 10	0.300	36	0.000	0.842	36	0.000
...When I am in a difficult situation, I can always find my way out of it.	Bottom 1	0.272	30	0.000	0.822	30	0.000
	Top 10	0.305	36	0.000	0.843	36	0.000
...have enough energy to do what I have to do.	Bottom 1	0.266	30	0.000	0.860	30	0.001
	Top 10	0.264	36	0.000	0.873	36	0.001
SDL Scale							
	Top or bottom	**Statistic**	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
...I believe that I can learn English, no matter how it is complicated.	Bottom 1	0.211	30	0.002	0.883	30	0.003
	Top 10	0.282	36	0.000	0.807	36	0.000
...I should use the internet for learning purposes, instead of having a good time.	Bottom 1	0.267	30	0.000	0.845	30	0.000
	Top 10	0.243	36	0.000	0.855	36	0.000
...I organise my study hours by making plans.	Bottom 1	0.192	30	0.006	0.910	30	0.015
	Top 10	0.279	36	0.000	0.871	38	0.001
...If I am motivated for learning, any distracting factors do not state-track me from my objective.	Bottom 1	0.215	30	0.001	0.912	30	0.017
	Top 10	0.257	36	0.000	0.881	36	0.001
...after each learning process, I think about what I should do to be more successful.	Bottom 1	0.255	30	0.000	0.849	30	0.001
	Top 10	0.265	36	0.000	0.887	36	0.002
...I hold myself responsible for my English learning.	Bottom 1	0.285	30	0.000	0.855	30	0.001
	Top 10	0.295	36	0.000	0.756	36	0.000
...I must know clearly the objectives of the new subject to be learnt.	Bottom 1	0.277	30	0.000	0.774	30	0.000
	Top 10	0.348	36	0.000	0.802	36	0.000
...generally, I try to finish my homework for the last moment.....	Bottom 1	0.214	30	0.001	0.858	30	0.001
	Top 10	0.274	36	0.000	0.838	38	0.000
.....I believe that active participation in the learning process in English class ensures better learning results.	Bottom 1	0.235	30	0.000	0.857	30	0.001
	Top 10	0.346	36	0.000	0.810	36	0.000
...To successfully learn a new learning material, I have to learn the previous relevant learning materials.	Bottom 1	0.357	30	0.000	0.775	30	0.000
	Top 10	0.318	36	0.000	0.831	36	0.000
...Instead of feeling despair when I encounter difficult things in English class, I think about what I should do.	Bottom 1	0.197	30	0.004	0.908	30	0.013
	Top 10	0.317	36	0.000	0.820	36	0.000
...While planning a new day, I prioritise time for learning.	Bottom 1	0.217	30	0.001	0.898	30	0.008
	Top 10	0.234	36	0.000	0.890	36	0.002
...I can produce alternative methods to reach solutions when I solve a problem.	Bottom 1	0.299	30	0.000	0.832	30	00.000
	Top 10	0.284	36	0.000	0.867	36	0.000
L2 motivation scale							
	Top or Bottom	**Statistic**	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
I am satisfied with my progress in English thus far.	Bottom 1	0.292	30	0.000	0.832	30	0.000
	Top 10	0.342	36	0.000	0.815	36	0.000
I think I can eventually speak English fluently and understand it	Bottom 1	0.179	30	0.015	0.913	30	0.018
	Top 10	0.252	36	0.000	0.894	36	0.002

well if I learn English from my school.							
I am satisfied with the English learning experience provided by my school	Bottom 1	0.275	30	0.000	0.871	30	0.002
	Top 10	0.323	36	0.000	0.821	36	0.000
English is important to me.	Bottom 1	0.210	30	0.002	0.895	30	0.005
	Top 10	0.347	36	0.000	0.687	36	0.000