Transactional Distance Perception as a Predictor for EFL Learners' Online Self-efficacy

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Abstract

Nowadays, technology has been used in education in general and second language learning in specific, in different ways. So, there is a need to do more in-depth research on its implications. The current study examined whether EFL learners' transactional distance perception could predict their online self-efficacy. To this end, 138 female and male Iranian EFL learners were selected through convenience sampling. Then, the participants were asked to complete two questionnaires, namely the transactional distance questionnaire and the online self-efficacy questionnaire. In order to answer the research questions, the data were analyzed using the Spearman coefficient of correlation and standard multiple regression. Based on the results of the data analysis, it was found that online self-efficacy was positively and significantly correlated with transactional distance perception, and transactional distance perception could significantly predict online self-efficacy findings of the present study have implications for the teachers, learners, and syllabus designers.

Keywords: EFL Learner; Online self-efficacy; Transactional distance

1. Introduction

Based on the distance education background, technology can be seen as a great connector between the students and instructors. Additionally, it can create more learning opportunities for learners through barrier elimination (Moore, 2000). Farajollahia and Moenikia (2010) argue that distance education does not compel the students to present physically at the place of instruction. However, distance and online learners have faced many challenges historically, such as impersonal interactions and unsatisfying situations (Lee et al., 2011, as cited in Abuhassna & Yahaya (2018)). Additionally, in distance learning, due to the physical distance, learners and teachers have experienced more of a distance that separates these two groups, though it can be questionable whether the distance between teaching and learning is a geographic separation of teachers and learners or a theoretical concept.

Moore (1997) developed transactional distance theory (TDT) as a psychological and communications gap. In addition, many researchers argue that TDT is an essential basic framework for understanding the distance education system. According to Moore (1997), DL developers should consider two essential variables that have primary roles in transactional distance (TD): structure and dialogue. Structure refers to the flexibility of the methods and strategies related to the learning environment, while dialogue refers to all interactions during a distance learning (DL) experience. In fact, the psychological traits of learners may have a significant role in the transactional distance system. Cognitive factors of learners such as self-efficacy, which is referred to as the belief in capabilities to perform an activity, could help them not only

use their own knowledge and opinions but also be a motivating factor (Butler & Winne, 1995, as cited in Rubin (2001)). Bates and Khasawneh (2004, p. 38) maintain that

self-efficacy in the specific online course relates to the skills of using online learning technologies. These skills include, for example, the use of emails, discussion boards, and Internet searches. Students who fear computer technologies may experience confusion, anxiety, a loss of personal control, frustration, and withdrawal.

Previous research on transactional distance learning has mainly dwelt on three primary variables as structure, dialogue, and autonomy. Moore and Kearsley (2005) suggest autonomy, a third factor in TDT, influences and interacts with dialogue and structure in the transactional distance. "Individual autonomy has been classified as self-management of pedagogy and metacognition. Both appeared to be important and occurring in distance learning" (Delgaty, 2019). Some findings reveal that the components of transactional distance significantly predict learner satisfaction (Kara, 2020).

The research findings of Mahle (2011 as cited in Abuhassna & Yahaya ,2018) recommended that student satisfaction and interaction may have a dependent relationship. Satisfaction happens when comprehended performance meets learners' expectations and is considered a short-term attitude about the learning process. Other studies have considered the link between TD and learner outcomes in an online EFL context, such as the study that was conducted by Kara (2020), which postulated that components of TD significantly predict learners' outcomes of perceived learning and satisfaction. A search such as that undertaken by Abuhassna and Yahaya (2018) has shown that the learners were satisfied during the distance education process based on Moore's TDT.

2.   Review of Related Literature

Since the late 19th century, distance learning has existed in many forms, using mail, radio, phones, TVs, and finally, computers. However, registration in distance learning has skyrocketed over the past two decades with the increase of synchronous and asynchronous communication technologies (Lebeck, 2017). Thus, Moore's transactional distance theory has played an essential role in providing a theoretical perspective that helps us understand teaching and learning outside the traditional classroom setting.

One definition provided for transactional distance theory is "the teacher-student interaction in environments with special characteristics that are spatially separated from each other (Moore, 2007). Moreover, such interaction is affected by the "structure, dialogue, and autonomy" occurring in a spectrum of somewhat perceived distances according to the relationships between the involved variables. Structure, dialogue, and student autonomy are pillars of distance learning that can be used to comprehend new learning situations (Kawka et al. 2012).

Applying the theory of transactional distance is based on the inverse dialogue-structure relationship about the autonomy of each learner. As the teacher-student dialogue upsurges or the course structure declines, the transactional distance decreases. As the teacher-student dialogue decreases or the course structure surges, the transactional distance increases. When the transactional distance increases, learners have to decide for themselves what, when, and where to learn. As the transactional distance increases, the learners become more responsible for learning. As a result, learners have to be increasingly self-reliant and able to function autonomously in order to succeed in distance learning systems where it is difficult to decrease the transactional distance (Moore & Kearsley, 2005).

Bandura (1997) believes that a central concept in social cognitive theory is self-efficacy, which refers to the self-evaluation of individuals' ability to perform the acts necessary to achieve a specific goal

successfully. A beneficial apparatus for researchers in predicting persistence, emotional response, and effort is self-efficacy (Zimmerman, 2000). According to Bandura (2001), when the belief in self-efficacy is more substantial, the struggle, perseverance, elasticity, and resilience will be more tremendous. This means that a strong belief in self-efficacy generates a sense of tranquility and empowers individuals to face challenging tasks. It affects our thinking, emotions, deeds, motivation, and actions primarily via cognitive and emotional channels and plays a vital role in forming our perceived life experiences (Chowdhury, 2020).

In addition, Bandura (2001) determined self-efficacy as the primary notion associated with one's own components of self-adjustment. Self-efficacy refers to beliefs regarding one's capability to plan and perform activities crucial to finishing an allocated implementation of expertise for specific tasks (Bandura, 1997). Therefore, self-efficacy is situation-dependent. For instance, a second language learner may have a great degree of self-efficacy for writing essays but a low one for speaking in public. Social psychological academics mentioned that noteworthy degrees of self-efficacy in a specific realm are associated with more success (Baumeister & Vohs, 2004; Pajares & Urdan, 2005). In social cognitive contexts, numerous researchers improve and discuss theories of self-efficacy, which is confidence in one's own aptitude or capability to complete a specific task. Through empirical studies, the computer self-efficacy (CSE) literature constructs the self-efficacy theory. Many scholars have found that CSE is a person's ability to take advantage of computer software and hardware (Compeau et al., 1999). Overall, CSE means one's efficacy estimation of various computer applications.

CSE could be conceptualized at two levels, namely, general and application-specific levels. Application-specific computer self-efficacy refers to the estimation of an individual's ability to perform application-specific computer-related tasks whose performance is application-dependent. Previous scholars have found that computer self-efficacy has a positive effect on behavioral intentions and the perceived ease of using software in e-learning. Perceived virtual environment self-efficacy positively affects task outcomes (Jia, Bhatti, & Nahavandi, 2014).

In a study conducted by Wang, Shannon, and Ross (2013), the relationship between technology self-efficacy, self-regulated learning, and online learning results was investigated. As a result, higher motivation levels for online lessons increased technology self-efficacy and class satisfaction. According to Nwankwo (2013), based on the online perceptions of faculty members of transactional distance theory, the more teachers had educational experience, the more the transactional distance decreased. The same relationship existed for teachers with more online teaching experience. Based on the findings of Nwankwo, the instructor interface and learning interaction are the most critical factors.

Ekwunife-Orakwue and Teng (2014) explored the influences of transactional distance conversation on learners' educational results concerning fulfillment and academic success in online and blended educational settings. They discovered that the association among learners and the material had a profound impact on learners' academic results as opposed to the learner-learner and learner-educator associations. Also, in a study by Jan (2015) on graduate learners in online courses at US universities, academic self-efficacy, computer self-efficacy, previous online learning experiences, and student gratification were measured. The results indicated that academic self-efficacy and computer self-efficacy, as well as prior experience and student gratification, were positively and significantly related.

Best and Conceição (2017) examined the impact of transactional conversational associations on learners' fulfillment in a multi-organizational, blended educational setting. According to their results, learners were discontent with the online elements of the blended academic course and encountered the

transactional distance of the conversation components between students and students and students and educators. This study found important constructive influences of transactional associations on learners' fulfillment in a blended educational setting.

According to White (2014, as cited in Kara, 2020), there are still some gaps in the literature regarding interaction in an online context, and more research is needed to address this issue. Thus, the goal of this study was to fill the gap in interaction in online language learning and determine the possible interplay between Iranian EFL learners' online self-efficacy and their transactional distance perception. In line with the purpose of the study, the following research questions were proposed:

RQ1. Is there any statistically significant correlation between Iranian EFL learners' online self-efficacy and their transactional distance perception?

RQ2. Can Iranian EFL learners' transactional distance perception predict their online self-efficacy?

3. Methodology

3.1 Participants

The participants of this study included 138 EFL learners from different language schools in Qazvin, Iran, based on convenience sampling due to availability and manageability reasons. All participants were kindly and voluntarily asked to attend in this research. All of them had experience with distance and online learning. They consisted of 77 female and 61 male teenagers with an age range between 15 and 19. All of them were Persian native speakers.

3.2 Instrumentations

In order to accomplish the purposes of this study, two questionnaires were used.

3.2.1 Transactional Distance Questionnaire

A transactional distance questionnaire was utilized in the study, which consists of 12 items developed by Paul, Swart, Zhang, and MacLeod (2015). It includes four parts: transactional distance between student and student (TDSS), transactional distance between student and teacher (TDST), transactional distance between student and content (TDSC), and transactional distance between student and interface (TDSI). These components may inter-correlate but are distinct, necessitating the development of subscales to reflect the sub-constructs. The reported reliability index of this questionnaire was more than 0.7, which was acceptable. The approximate time for completing this questionnaire was 20 minutes.

3.2.2 Online Self-Efficacy Questionnaire

The online self-efficacy scale (OLSS) developed by Sun and Rugers (2020) was utilized in the research, and it includes 73 items with four facets: technology use self-efficacy, instructor and peer communication, interaction self-efficacy, self-regulation efficacy, and self-motivation efficacy. A 6-point Likert-type scale (strongly disagree, disagree, somewhat disagree, somewhat agree, agree, and strongly agree) is adopted for these 73 items. The estimated reliability index of this scale is 0.9, which is highly acceptable. It took around 15 minutes for the participants to fill out the scales.

3.3 Data Collection Procedure

As the main objective of the present study was to predict Iranian EFL learners' online self-efficacy through transactional distance perception, the researchers selected 138 EFL learners studying general English at

different institutions in Qazvin. All participants agreed to take part in the research study, and they were sufficiently informed of the research purpose. Meanwhile, all participants had experience with distance and online learning. TD and online self-efficacy questionnaires were chosen from reliable and valid sources, and their reliability was calculated through a pilot study by estimating Cronbach's alpha of 30 learners with the same characteristics as the study sample. After that, the questionnaires were distributed among them online through a Google form. To guarantee the trustworthiness of this study, all participants were fully informed of how to fill out the questionnaires and guaranteed that their answers and personal information would remain confidential. After collecting the questionnaires, the researchers scored the items and calculated the final scores obtained from each question for every participant. Finally, the collected data was analyzed using the Spearman coefficient of correlation and multiple regression.

4.   Results

In order to check the normality of the distributions, two procedures were followed. The descriptive statistics of the data were obtained and kurtosis and skewness ratios were calculated. Second, the Kolmogorov-Smirnov test was run as a further attempt to inspect the normality of the distributions.

Table 1. Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Sttistic	df	Sig.	Statistic	df	Sig.
online self-efficacy	.142	138	.000	.900	138	.000
transactional distance	.051	138	.200*	.985	138	.142
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

According to the results, as the Sig value for online self-efficacy was less than 0.05, this suggests the related scores were not considered normal. However, the scores related to transactional distance perception were considered normal. The descriptive statistics related to the obtained scores on the instruments, including the calculated values of skewness ratio and kurtosis ratio, appear below in Table 2.

Table 2. Descriptive Statistics of Research Variables

		Statistic	Std. Error	Ratio
Online self-efficacy	Mean	158.31	2.201	
	Std. Deviation	25.852		
	Skewness	-.938	.206	-4.55
	Kurtosis	.355	.410	0.86
Transactional distance	Mean	115.80	1.163	
	Std. Deviation	13.660		
	Skewness	-.322	.206	-1.56
	Kurtosis	.061	.410	0.14

As demonstrated in Table 2, if both skewness ratio and kurtosis ratio values fall within the range of -1.96 and +1.96, this point can support the normality of distribution for the scores (Tabachnick & Fidell, 2007). Accordingly, all scores related to transactional distance perception were considered normal,

whereas the other research variable, i.e., online self-efficacy did not meet this assumption and was not considered normal. In order to answer the first research question, the data were analyzed using the Spearman coefficient of correlation, which is a non-parametric formula. Table 3 shows the result of this analysis.

Table 3. Correlation between Online Self-efficacy and Transactional Distance Perception

			TD perception
Spearman's rho	Online self-efficacy	Correlation Coefficient	.707**
		Sig. (2-tailed)	.000
		N	138

**. Correlation is significant at the 0.01 level (2-tailed).

According to the results of the analysis reported in Table 3, it was concluded that there was a positive and significant correlation (r=.707, p=0.000, N=138) between Iranian EFL learners' online self-efficacy and their transactional distance perception as p value was less than 0.05. Also, by running a further statistical analysis the correlation among the components of these two variables were investigated, as well. Table 4 depicts these correlations.

Table 4. Correlation between Learners' Self-efficacy and TD Perception Components

				TU efficacy	self-OLT efficacy	self-IPIC efficacy	self-SRM self-efficacy
Spearman's rho	TD students teachers	between and	Correlation Coefficient	.213*	.190*	.277**	.323**
			Sig. (2-tailed)	.012	.026	.001	.000
			N	138	138	138	138
	TD students content	between and	Correlation Coefficient	.397**	.364**	.487**	.501**
			Sig. (2-tailed)	.000	.000	.000	.000
			N	138	138	138	138
	TD students students	between and	Correlation Coefficient	.523**	.548**	.727**	.594**
			Sig. (2-tailed)	.000	.000	.000	.000
			N	138	138	138	138
	TD students interface	between and	Correlation Coefficient	.270**	.201*	.321**	.370**
			Sig. (2-tailed)	.001	.018	.000	.000
			N	138	138	138	138

Correlation is significant at the 0.05 level (2-tailed).*
Correlation is significant at the 0.01 level (2-tailed).**

According to the results of the analysis reported in Table 4, it was concluded that there was a positive and significant correlation between Iranian EFL learners' online self-efficacy and transactional distance perception components as the p-values for all were less than 0.05. Moreover, by comparing the correlation indices, it was concluded the correlation among TD between students and students and all components of

online self-efficacy was moderate to high correlation (0.5<r<0.8). However, by comparing the correlation indices, it was concluded the correlation among TD between students and teachers and all components of online self-efficacy were low (r<0.3).

In addition, the second research question of the study aimed to systematically investigate whether Iranian EFL learners' online self-efficacy could be predicted through their transactional distance perception. As Iranian EFL learners' online self-efficacy and their transactional distance perception had a positive and significant relationship with each other, this question was answered through running a standard multiple regression analysis. So, the legitimate number of participants needed for running a multiple regression was checked. As Tabachnick and Fidell's (2007) criterion is highly recommended by many scholars, their formula for calculating sample size requirements was taken into account, i.e., the number of independent variables: $N > 50 + 8m$ (m = the number of independent variables). In this analysis, there were one independent/predictor variable, calling for a sample including more than 58 participants. Including 138 cases, the sample pool seemed to be large enough to meet this assumption. Table 6 presents the regression model summary including the R and R^2.

Table 6. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.748a	.560	.547	17.409

a. Predictors: (Constant), transactional distance between students and interface, transactional distance between students and teachers, transactional distance between students and students, transactional distance between students and content

b. Dependent Variable: online self-efficacy

As reported in the above table, R came out to be 0.748 and R^2 came out to be 0.560. This means that the model explains 56 percent of the variance in learners' online self-efficacy (Cohen, Cohen, West, & Aiken, 2003). Table 7 reports the results of ANOVA (F (4,133) = 42.281, p = 0.000), the results of which were considered significant. This means that the model can significantly predict learners' online self-efficacy.

Table 7. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	51254.711	4	12813.678	42.281	.000b
	Residual	40306.891	133	303.059		
	Total	91561.601	137			

a. Dependent Variable: online self-efficacy

b. Predictors: (Constant), transactional distance between students and interface, transactional distance between students and teachers, transactional distance between students and students, transactional distance between students and content

Table 8 demonstrates the Standardized Beta Coefficients which signify the degree to which the predictor variables contribute to the prediction of the predicted variable.

Table 8. Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.

		B	Std. Error	Beta		
1	(Constant)	30.043	14.464		2.077	.040
	TD between students and teachers	-.548	.505	-.070	-1.086	.279
	TD between students and content	.928	.510	.130	1.821	.071
	TD between students and students	2.076	.220	**.646**	9.453	**.000**
	TD between students and interface	1.072	.428	**.154**	2.503	**.014**

a. Dependent Variable: online self-efficacy

The inspection of the p values showed two TD components could be predictors of learners' online self-efficacy as their p values were less than 0.05. Also, by inspection of the Beta Coefficients of the mentioned two predictors, it was revealed that TD between students and students could be the better predictor for learners' online self-efficacy (Beta coefficient=0.646) than TD between students and interface (Beta coefficient=0.154).

5. Discussion

Based on the results of data analyses, it was found that online self-efficacy was positively and significantly correlated with transactional distance perception, and two components of transactional distance perception could significantly predict learners' online self-efficacy. The findings for the research questions were quite in line with the previous theories. The construct of transactional distance is composed of subjective feelings of being able to communicate, know the materials, and feel satisfied with the teaching environment (Wengrowicz, 2013). The perception of low transactional distance would mean a positive feeling when handling communication and course materials. In the context of online education, it is expected to decrease transactional distance if a learner's self-efficacy in online interaction is high. Bandura (1997) defines self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Therefore, self-efficacy may originate from good experience, persuasion, and psychological and emotional states (Bandura, 1997). Based on the theories mentioned above, it is assumed that the perception of transactional distance would positively correlate with online self-efficacy, and the current study showed a positive correlation between self-efficacy and transactional distance perception, too.

Empirical studies focusing on transactional distance are limited and seem to have mixed results. Nwankwo (2013) has shown that experience in online education correlates with a better transactional distance. Given that experience is one of the sources of self-efficacy, Nwankwo's study (2013) suggests a negative relationship between online self-efficacy and transactional distance. Lim (2001) has also found that self-efficacy in computer and online courses has a vital role in satisfaction with online courses. However, Bullen (1998), Gunawardena and Duphorne (2001), and Litchfield, Oakland, and Anderson (2002) did not show any considerable effect of technical and computer familiarity on online instruction. Such discrepancies could be associated with methodological issues such as inadequate sample size or measurement errors. As long as there are few studies on the role of transactional distance in online self-efficacy, a proper conclusion seems challenging to reach.

6. Conclusion

The results of the study were discussed in light of related theories and empirical studies. Previous empirical studies were also mixed regarding the relationship between the variables mentioned above. Based on the findings of the study, the pedagogical implications associated with transactional distance and online self-efficacy can be proposed. First, transactional distance is a group-based variable, and many people are involved in this variable. Therefore, to improve transactional distance perception, the self-efficacy of all the individuals involved in distance education should be targeted and enhanced. Second, self-efficacy is closely related to success and achievement. More practice in online teaching and taking advantage of concrete techniques to promote self-efficacy may pave the way for teachers and learners to be more confident in facilitating online communications and dealing with possible challenges. Third, transactional distance has recently been emphasized from a psychological perspective. In line with this perspective, teachers are encouraged to enhance distance education by using flexible methods and strategies related to the learning environment and promoting interactions in distance education (Delgaty, 2019). Fourth, online education is an inevitable part of learning and teaching, and teachers are suggested to learn how they can decrease transactional distance by enhancing communication between students and teachers. Such enhancement can be initiated by learning about the components of the transactional distance, namely the structures of instructional programs, the interaction between learners and teachers, and the degree of self-directedness of the learners (Moore, 1993).

Like many empirical studies, this study has not been a big-scale study without any imperfections. Therefore, future studies are suggested to explore the role of gender and age. Also, replication with a mixed-methods design could provide more detailed information. further the relationship between online self-efficacy and transactional distance.

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