

Developing a conceptual model for the interplay among teachers' stroke, identity, immunity, and TPACK: EFL teachers in focus

Shabnam Kadkhodaei

Ph.D. Candidate, Department of English, Shahreza Branch, Islamic Azad University, Shahreza, Iran

Mohammad Reza Talebinejad

Associate Professor, Department of English, Shahreza Branch, Islamic Azad University, Shahreza, Iran

Mohsen Shahrokhi*

Assistant Professor, Department of English, Shahreza Branch, Islamic Azad University, Shahreza, Iran

*Corresponding author's email: shahrokhi1651@yahoo.com

Abstract: Formulating a hypothesis, the current study set out to develop a conceptual framework for exploring the relationships among teachers' stroke, identity, immunity, and TPACK in an EFL context. To this end, a Multiple Regression Analysis was run to model the interplay between the variables and to check whether the independent variables have any significant predictive power about the dependent variable (teachers' stroke). The Teacher Immunity Questionnaire, TPACK Questionnaire, Teacher's Identity Questionnaire, and Teachers' Stroke Scale were distributed among 200 Iranian EFL teachers who agreed to participate in the study, and 124 EFL teachers returned all the filled-in questionnaires. The analysis of the collected data revealed that there was a statistically significant association between the study's key factors, including teacher identity, immunity, TPACK, and stroke. Moreover, it was discovered that the predictors of the model that the present research produced, could all significantly predict the Teacher's Stroke, as the dependent variable of the study. The study provides implications for stakeholders in EFL contexts.

Keywords: Conceptual model; Identity; Immunity; TPACK; Stroke

Article History: Received: 10 Dec 2023, Accepted: 11 Dec 2023, Published: 17 Jan 2024

INTRODUCTION

Teachers' behavioral, psychological, and teaching attributes are an important field of study since research has demonstrated that they have a major impact on the efficacy of systems of education and the educational accomplishment of students (Derakhshan et al., 2020; Burroughs et al., 2019). This is particularly true in the case of Iranian English as a Foreign Language (EFL), since learners' opportunities for practicing the target language are constrained to the classroom due to the sparse usage of English in regular contacts within the Iranian population (Pishghadam et al., 2019). Coombe's (2020) article titled "Quality Education Begins with Teachers: What Are the Qualities That Make a TESOL Teacher Great?" highlights the importance of teacher qualities in ensuring quality education. Therefore, it is essential to pay attention to and research the qualities that make teachers successful.

Researchers across all fields and language instruction in particular have been acknowledging the importance of teacher success since the early 1920s. They have developed various frameworks and models to define and conceptualize the attributes of qualified educators (e.g., Elizabeth et al., 2008; Stronge et al., 2007). Accordingly, one argument is that investigating teacher-related factors that contribute to success and professional growth is a valuable area of research (Soodmand Afshar & Doosti, 2013).

A variable in a teacher's interpersonal communication known as "teacher stroke" is a recently introduced concept defined as any action that shows appreciation for a different individual's value and a sense of being (Shirai, 2006). Studies have shown that teacher stroke can affect significantly various aspects of the teaching and learning process, including teachers' professional performance (Frymier et al., 2019), teacher success (Pishghadam et al., 2019), students' motivation (Pishghadam & Khajavy, 2014),

dedication to classroom attendance (Pishghadam et al., 2021), and proficiency in another language (Rajabnejad et al., 2017). Accordingly, teacher stroke could be hypothesized to be correlated with several other teacher-related psychological and well-being variables, for instance, teacher immunity, which contributes to teachers' effectiveness and their students' achievement (Mercer, 2018). Hiver (2015) asserts that every aspect of teachers' professional performance is affected by their immunity. It could then be hypothesized that Iranian EFL teachers' stroke is associated with their immunity. If the association between teacher stroke and teacher immunity is tested and proven to be significant, it could further be posited that the teacher stroke is also correlated with the teacher's identity, since teacher immunity acts as an asset in understanding language teachers' sense of self, and professional identity (Hiver, 2015).

Another hypothesis formed in the current study regarding teacher stroke is the degree to which teacher stroke could be correlated with teacher's knowledge, specifically TPACK knowledge. The hypothesis developed aims to find out whether TPACK knowledge can empower teachers to fulfill students' educational needs and consequently pave the way for the teacher to provide more stroke that in a reciprocal relationship can result in more credibility (McCroskey & Teven, 1999). The current research study aims to conduct an empirical test of the aforementioned propositions.

LITERATURE REVIEW

In this literature review, the authors will explore the literature on stroke, teacher's identity, teacher's immunity, and technological pedagogical content knowledge (TPACK) in the context of EFL instruction, with a focus on Iranian EFL teachers.

Teacher Stroke

Positive student-teacher interactions can, among other things, promote interpersonal skills, motivation, learning, and stress reduction in the educational setting (Peng & Woodrow, 2010; Pierson, 2003). One of the most important techniques for studying interpersonal connections between teachers and students is Berne's (1988) Transactional Analysis (TA), which is described as "a theory of personality and a systematic psychotherapy for personal growth and personal change" (Stewart & Joines, 1987, p. 3). Particularly in educational settings, the use of TA yields more effective and transparent teacher-student exchanges (Stewart & Joines, 1987). According to Berne (1988), TA theory incorporates aspects of interactions, self-worth status, social status, temporal systems, and stroke. Any action that indicates an awareness of another person's presence is referred to as a unit of recognition, and the stroke component expresses this. Stroke, specifically in an educational setting, refers to instructors' concern for and attention to their students (Rajabnejad et al., 2017).

Positive and negative, verbal and nonverbal, and conditional and adversative strokes are all possible. Positive strokes produce the strokee's happiness and delight in this regard, whilst negative strokes cause the strokee to feel unsatisfied. The exchange of communication, which might take the form of one word or an extended conversation, is referred to as verbal strokes. Contrarily, non-verbal cues include actions like smiling, nodding, and caressing among others. Unconditional strokes are more concerned with what individuals are, as opposed to conditional strokes, which are related to people's behaviors.

Since it can encourage pupils to do well and increase the likelihood that the stroked action will recur, stroke plays a crucial function in the classroom (Stewart & Joines, 1987). Researchers have taken note of the stroke concept, based on an analysis of the pertinent literature, and various studies have looked at how it interacts with other factors. The motivation of students (Pishghadam & Khajavi, 2014), students' socioeconomic status (Iraqzad & Shahriari, 2017), teacher burnout (Yazdanpour, 2015), teacher gender identity (Noorbakhsh et al., 2018), and teacher success (Pishghadam et al., 2019), for instance, have all been linked to teacher stroke. In the EFL context, past literature reveals an association between a teacher's stroke with L2 students' achievement (Freedman, 1993), L2 education, and dedication to classroom attendance (Namaghi, 2016; Pishghadam et al., 2021), in addition to the teacher's stroke typology conducted by Pishghadam and Farkhondehfar (2017).

A better understanding of the nature of a teacher's stroke could be developed by finding the other teacher's variables that can affect the function and influence of teacher stroke. Language Teacher's immunity, among other teacher variables, that has been studied in the EFL contexts per se is a well-being teacher's variable whose association with EFL teacher's stroke is still unexplored. This study is, therefore, an attempt to cast further light on this unexplored research area.

Language Teacher Immunity

The immunity of language teachers is a significant factor that has a profound impact on their behavior, attitude toward their profession, and professional identity, as indicated by several studies (Haseli et al., 2018; Hiver, 2015, 2016). Essentially, the immunity of English language instructors refers

to the defense mechanisms that language teachers employ to mitigate the negative effects of disruptions on their professional identity as L2 teachers (Hiver & Dörnyei, 2017). In simpler terms, teacher immunity serves as a shield for teachers, equipping them with the necessary tools to handle stress in complex situations and provide successful teaching (Hiver, 2017).

Similar to physiological immunity, the defense mechanism of language teachers manifests in two ways when faced with difficult circumstances: productive and maladaptive. When language instructors are passionate, resilient, and motivated, they are said to have productive immunity, which secures them from adverse situations. On the contrary, teachers who have maladaptive immunity experience emotional fatigue, negativity, and apathetic conditions (Hiver & Dörnyei, 2017). In Iran, Haseli et al. (2018) investigated the most common form of immunity across the English instructors' community and checked how they obtained their immunity. The study revealed that maladaptive immunity predominated among Iranian EFL teachers, but did not specify the factors that influence the different types of immunity during various stages of immunity development. Rahmati et al. (2019) examined how immunity developed among Iranian EFL instructors and found that instructors' poor confidence in themselves, low earnings, low student enthusiasm, constraints on time, and substantial parental demands were the main disruptions that sparked their immunity. As language teacher immunity significantly impacts teachers' career choices and actions (Hiver, 2015), investigating its relationship with teachers' identity and stroke provides valuable insights (Hiver & Dörnyei, 2017). Despite this, the pertinent literature has not explored the factors that, along with immunity, can predict the EFL instructors' stroke. Hence, there is a need to conduct research on the predictive power of the immunity of language instructors and its relationship with their job identity (Hiver, 2016) in an EFL context.

Teachers professional Identity

Recent research on teacher development has given more attention to the concept of professional identity. This has led to investigations into teachers' perspectives, narratives, and biographies (Rodgers & Scott, 2008), which provide insights into the factors that influence an individual's inclination toward a particular job (Tsakissiris, 2015). According to Sedikes and Brewe (2001), people form their identities based on their individual characteristics, relational connections, and group affiliations. As Skorikov and Vondracek (2011) maintain a person's concept of individual identity heavily depends on their sense of job or professional identity. Professional identity plays a significant role in the growth and development of a nation (Low et al., 2012). The process of developing a professional identity is thought to be influenced by a variety of situations and personal factors, and by external factors such as political, social, and cultural circumstances, as well as interactions with others, being critical in shaping a person's identity (Bressler & Rotter, 2017).

Language teacher professional identity has recently heeded much from L2 teacher researchers (De Costa & Norton, 2017). Teacher identity development is now seen as an essential component of instructor education and is a prominent area of research in the training of teachers (Tsui, 2003). According to Morgan and Clarke (2011), the identity of language teachers is a crucial aspect of the ongoing reconstruction of their expertise and abilities in the field of language instruction. Such a perspective aligns with the recent sociocultural trends in the field of SLA teaching, which aim to present instructor expertise not as a solitary array of intellectual abilities but as inherently associated with factors such as the growth and identity of instructors (Johnston et al., 2005). This approach suggests that investigating the development of teachers' identities can provide insight into how language teachers develop as experts as they transition from a student self to an instructor self.

Language education studies, in recent years, have focused on investigating different aspects of language instructors' job identity development in both L2 instruction and teacher preparation. Scholars have explored the connection between language teacher identity and their linguistic identities, race, and gender (Aneja, 2016; Huang, 2014; Kayi-Aydar, 2015; Rudolph, 2016; Park, 2017; Yazan & Rudolph, 2018; Vitanova, 2016). Moreover, they have examined how language teachers negotiate discourses in communities of practice, the impact of internships in developing identity, teachers' positioning and agency in teaching contexts, the role of emotions in identity development, and how teacher education courses affect identity negotiation (Trent, 2017; Wolff & De Costa, 2017; Yazan, 2017, 2018). While teacher professional identity is a well-established research line studied from various perspectives as briefly reviewed above, its association with teacher stroke in the development of a conceptual model that is a major objective for the current study is still calling for further studies.

Teachers' TPACK

With the increasing availability and widespread utilization of technology, educators recognize the significance of incorporating it into the curriculum and pedagogical practices. Moreover, the potential effects of technology on the professional growth and performance of EFL teachers have become particularly significant.

In the field of education, Technological Pedagogical Content Knowledge (TPACK) is a

conceptual model (Mishra & Koehler, 2006) that explains how teachers can incorporate technology into their instruction. TPACK is derived from Shulman's Pedagogical Content Knowledge (PCK) (1986), serving as its foundation. According to Shulman, a teacher's effectiveness depends on their knowledge of content and pedagogy. TPACK extends Shulman's PCK and proposes that teachers must cultivate three essential knowledge domains: technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK). By developing these domains, teachers can effectively teach subject matter content using specific instructional methods and technology in various contexts (Bostancıoğlu & Handley, 2018).

Educators and researchers have taken an interest in the TPACK framework, with around 600 publications currently listed in the Scopus database and a number of papers in the Web of Science, as reviewed by Tseng et al. (2020). The researchers conducted a critical evaluation of TPACK studies and identified several implications for future research, including exploring the relationship between TPACK and other teacher-related variables. Numerous investigations have been carried out in this field, examining the link between instructors' TPACK, their educational ideas, and self-efficacy. (Chai et al., 2013; Kavanoz et al. 2015; Liu & Kleinsasser, 2015; Mei et al., 2018; Saudelli & Ciampa, 2016; Yang, 2018). However, there is a lack of understanding of the findings in TPACK research related to other teacher-related factors such as teachers' immunity, professional identity, and stroke, particularly in an EFL context like Iran.

OBJECTIVES

Previous research has highlighted the significance of the teacher's identity, immunity, and TPACK in EFL teaching effectiveness (e.g., Jiang et al., 2021; Koehler & Mishra, 2009; Yost & Wilmot, 2015). However, few studies have examined the relationships among these factors and their potential interactions with stroke in the Iranian EFL context. As noted by Pishghadam et al. (2018), understanding the complex interplay between different factors affecting EFL teachers in Iran is crucial for developing effective support systems and interventions that can enhance their well-being and teaching effectiveness. Therefore, the present study aims to develop a conceptual model for exploring the relationships between stroke, teacher's identity, teacher's immunity, and teacher's TPACK in Iranian EFL teachers. Such a framework can inform the development of effective interventions and support systems that can enhance EFL teachers' well-being and teaching effectiveness in Iran. Understanding the intricate nature of EFL teaching will be made easier with the help of this research and it can provide insights for teacher training programs and educational policymakers.

Research questions

1. What are the characteristics of a conceptual model developed for the interplay among Iranian EFL teachers' stroke, Identity, Immunity, and TPACK?
2. Which predictor/s (Immunity, Identity, and TPACK) can significantly predict Iranian EFL teachers' stroke best?

METHODOLOGY

Design of the Study

This study employed a quantitative design to launch an investigation into determining to what degree relationships exist among the teachers' immunity, TPACK, teachers' identity, and stroke in the Iranian EFL context. The focus of the study was on gathering and analyzing data in numerical form to characterize the existing situation and look into potential links among the variables that made up the research. This exploratory and non-experimental study enjoyed reliable questionnaires of teachers' immunity, TPACK, teachers' identity, and stroke.

The conceptual framework adopted in this study for selecting variables hinged on the previous studies carried out in the domain of the above-mentioned variables. It is intended that the findings will provide a better understanding of the teachers' immunity, TPACK, identity, and stroke. Furthermore, the information obtained will contribute to identifying teachers' and school needs and ultimately yielding improved student learning and teaching effectiveness.

Participants and Settings

According to data saturation procedures, the present study made use of 124 EFL teachers, both male and female. The researchers chose EFL instructors from several language schools spread out over Iran's center, east, west, north, and south regions to create a representative sample of Iranian EFL instructors. The researchers selected teachers from the mentioned locations because they wanted to incorporate the perspectives of EFL teachers across various regions of Iran, to propose a general-purpose model. To this end, 124 EFL instructors were chosen at random among 200 instructors who were

DEVELOPING A CONCEPTUAL MODEL FOR THE INTERPLAY AMONG TEACHERS' STROKE, IDENTITY, IMMUNITY, AND TPACK: EFL TEACHERS IN FOCUS

contacted and asked to take part in the research project by completing questionnaires. These instructors ranged in age from 20 to 53.

Instruments

This study employed four instruments to collect the required data as follows.

Teacher Immunity questionnaire

The study's quantitative data were collected using a teacher immunity questionnaire, created by Hiver (2016), which consists of two sections. Demographic information was gathered in the first section, including teaching experience, gender, and age. The second section of the questionnaire consisted of 39 items divided into seven subscales, including coping, self-efficacy of instructor, burnout, resilience, views on instruction, willingness to change, and affectivity. These items were measured using a 7-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree." The questionnaire displayed an overall Cronbach's alpha index of 0.85, indicating strong internal consistency (Songhori et al., 2018). This instrument was translated into Persian by Songhori et al. (2018), and inter-coder reliability was established through back-translation by two professional translators, with a reported Cohen's Kappa of 0.88, indicating high reliability.

TPACK questionnaire

In this study, Bagheri's (2020) TPACK tool was utilized because its validity and reliability have been established in an EFL context. The tool included 31 items that utilized a seven-point Likert scale, measuring three sources of knowledge: CK, PK, and TK. Interactions between these three sources created four additional knowledge sources: Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), Pedagogical Content Knowledge (PCK), and Technological Pedagogical Content Knowledge (TPACK). Additionally, the questionnaire evaluated teachers' self-assessed confidence in utilizing web-based teaching and searching for subject-specific web materials. These items were incorporated under a new category called Web Content Knowledge (WCK). In the current study, the total Cronbach's alpha for the questionnaire was determined to be 0.86.

Teacher's Identity Questionnaire

The third survey used in the study was the teacher's identity questionnaire, adapted from Liou (2008). The questionnaire comprises two parts. The first part, Section A, included eight questions that were designed based on the components of professional identity for non-native English teachers and focused on their views regarding the social status of their job, their job commitment and evaluation, and their perceptions of their pupils' ideas about their instructions. Following the initial section, Section B included 18 questions intended to gauge respondents' views on language proficiency in different contexts, such as grammar and pronunciation, their preferences in teaching content, and whether they believe the purpose of learning English is to achieve language proficiency and accuracy or intelligibility in communication. The teacher's identity questionnaire demonstrated a reliability of 0.85.

Teachers' Stroke Scale

This questionnaire was an instrument developed and validated by Kadkhodaie et al. (2024) for use in research studies focused on assessing the EFL teacher's perceived stroke practice. The scale consists of 34 items, with choices varying between Strongly Disagree (SD) and Strongly Agree (SA), as a five-point Likert scale. The items on the scale assess various aspects of teachers' classroom behavior and interactions with students, such as their ability to greet and motivate students, their use of disciplinary measures, their relationship with students, and their use of up-to-date and real-life teaching materials.

The construct validity of the Teacher Stroke Scale was checked by Kadkhodaie et al. (2024) using two methods: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The convergent validity was established by examining the correlations between the items on the scale and their respective factors, which were found to be significant and in the expected direction (Kadkhodaie et al., 2024). The scale demonstrated strong internal consistency, as evidenced by a Cronbach's alpha coefficient of .87, indicating that the items in the scale effectively measured a shared concept. The Teacher Stroke Scale provides an overall estimate of EFL teachers' perceived stroke practice based on teachers' classroom behavior and interactions with students.

Procedures

To administer the research instruments to EFL teachers, it was essential to ask for their permission. Thus, the permissions were gained from the heads of the targeted institutes. Then, they introduced the researchers to the teachers and the researchers gave a brief overview of the study, addressing any concerns that teachers might have about the study. Informed permission from respondents was a crucial step in conducting ethical research. The participants' responses were kept anonymous.

Before conducting the research, a briefing session was held for the participants who were Iranian EFL teachers. In this session, the researchers explained different aspects of the study to ensure that all of the participants fully understood that the result of the study was going to be used just for research purposes. Then, the research instruments were distributed among 200 teachers who agreed to participate in the study. Some 124 EFL teachers managed to return the questionnaires within the one-month allotted

time. The data collected were keyed into the software Statistical Packages for Social Science (SPSS, version 26) for statistical analysis.

DATA ANALYSIS AND RESULTS

The principal goal of the current research was to explore the nature of the relationship among the main variables of the study, namely the Teacher's Identity, Teacher's Immunity, Teacher's TPACK, and Teacher's Stroke. To this end, a Multiple Regression Analysis was run. Multiple Regression offers the chance to examine the connection between variables. Furthermore, it can create a model of the relationship between variables, enabling predictions to be made about the dependent variable (teachers' stroke) based on the scores of independent variables (immunity, professional identity, and TPACK) variables. To guarantee the validity and reliability of the findings derived from a Multiple Regression analysis, specific assumptions described by Hahs-Vaughn and Lomax (2020) were checked in the current study.

Table 1 Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.681 ^a	.463	.450	.26595	1.954

a. Predictors: (Constant), Teacher's TPACK, Teacher Identity, Teacher's Immunity

b. Dependent Variable: Teacher's Stroke

According to Table 1, the *R*-value in the *R* column indicates the magnitude of the association between the dependent variable, which is the teacher's stroke, and the collective predictor variables, such as immunity, professional identity, and TPACK. In the present research, the *R*-value was 0.68, denoting a robust relationship (Cohen, 1988). The *R*-square value ($R^2 = .463$) in the Model Summary table illustrates the proportion of variability in the dependent variable, the teacher's stroke, that is accounted for by the included predictors. The combination of predictors, including immunity, professional identity, and TPACK, explained around 46% of the variability in Teacher's Strokes, as indicated in Table 1. According to Cohen (1988), the impact size of the predictor set on the dependent variable, as measured by *R*-square, can be interpreted using the following benchmarks: $R^2 \leq .02$ (small effect); $R^2 = .13$ (medium effect); $R^2 \geq .26$ (large effect).

Table 2 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.332	3	2.444	34.552	.000 ^b
	Residual	8.487	120	.071		
	Total	15.819	123			

a. Dependent Variable: Teacher's Stroke

b. Predictors: (Constant), Teacher's TPACK, Teacher Identity, Teacher's Immunity

In Table 2, the *F*-ratio is used to evaluate the suitability of the regression model for the data. It tests whether the independent variables, including immunity, professional identity, and TPACK, predict the dependent variable, the teacher's stroke, significantly. According to the table, $F(3, 120) = 34.552$ and $P < .000$, which suggests that the regression model is well-suited for the data and that the independent variables have a significant predictive ability for the teacher's stroke.

Table 3 Parameter Estimates with Robust Standard Errors

Dependent Variable: Teacher's Stroke

Parameter	B	Robust Std. Error ^a	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	1.678	.426	3.941	.000	.835	2.521
Identity	.313	.140	2.241	.027	.037	.590
TPACK	.130	.047	2.789	.006	.038	.222
Immunity	.161	.055	2.907	.004	.051	.270

a. HC3 method

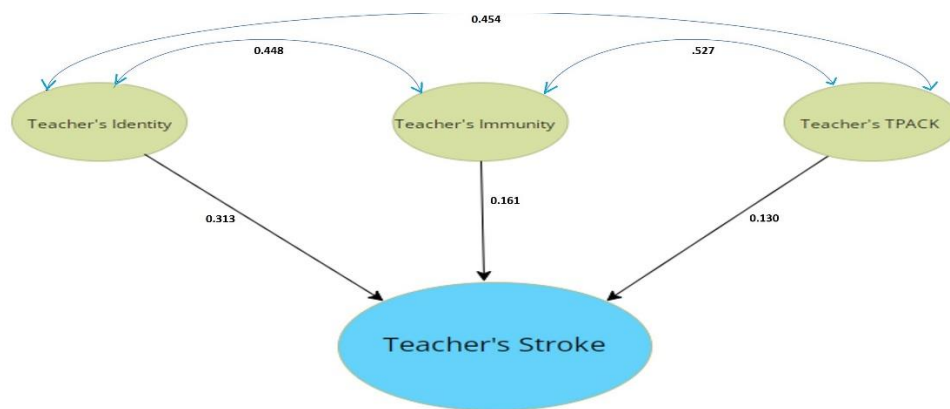
Table 3 provides information on the degree to which each predictor variable makes a significant contribution to the model. Looking at the Sig. column, it is revealed that the Teacher's Identity ($P = 0.027$), Teacher's Immunity ($P = 0.004$), and Teacher's TPACK ($P = 0.006$) as predictors of the model, could all significantly predict the Teacher's Stroke, as the dependent variable of the study. The Beta column in the table presents the unstandardized beta coefficients (B values) for the model. The coefficients provide insights into the associations between the dependent variable (Teacher's TPACK) and

DEVELOPING A CONCEPTUAL MODEL FOR THE INTERPLAY AMONG TEACHERS' STROKE, IDENTITY, IMMUNITY, AND TPACK: EFL TEACHERS IN FOCUS

all the predictor variables (Teacher's Identity, Teacher's Immunity, and Teacher's TPACK). Essentially, these B values offer an understanding of the impact each predictor has on the outcome while holding the impacts of other predictors constant. It follows that for every one-unit increase in the Teacher's Identity mean score, the Teacher's Stroke mean score is expected to increase by .313 units, holding the remaining predictors constant (Teacher's Identity, $B_1 = .313$); for every one-unit increase on the Teacher's Immunity mean score, the Teacher's Stroke mean score is expected to increase by .161 units, holding the remaining predictors constant (Teacher's Immunity, $B_2 = .161$); for every one unit increase on the Teacher's TPACK mean score, the Teacher's Stroke mean score is expected to increase by .130 units, holding the remaining predictors constant (Teacher's TPACK, $B_3 = .130$).

In a nutshell, a Multiple Regression analysis was conducted to determine whether a Teacher's Identity, Teacher's Immunity, and Teacher's TPACK could significantly predict Iranian EFL participants' Teacher Stroke. The regression results revealed that the model accounted for 46% of the variance and served as a significant predictor of Iranian EFL participants' Teacher's Stroke, $F(3, 120) = 34.552$, $P < .000$. In the analysis, Teacher's Identity, Teacher's Immunity, and Teacher's TPACK contributed significantly to the model ($B_1 = .313$; $B_2 = .161$; $B_3 = .130$) respectively.

Figure 1 Conceptual Model Diagram



The multiple regression analysis, run to find the relationship among the variables and the prediction power of the independent variables could be conceptualized in Figure 1 as a model developed by the current study.

DISCUSSION

The results of the present research demonstrated a significant statistical relationship between Teacher's Identity, Teacher's Immunity, Teacher's TPACK, and Teacher's Stroke. Moreover, it was revealed that the Teacher's Identity ($B_1 = .313$, $P < .05$), Teacher's Immunity ($B_2 = .161$, $P < .05$), and Teacher's TPACK ($B_3 = .130$, $P < .05$) as predictors of the model that the current study developed, could all significantly predict the Teacher's Stroke, as the dependent variable of the study.

The concept of teacher stroke as explored in association with the teacher's identity has not been investigated in the previous literature, according to the researchers' best knowledge. Nonetheless, the relationship between the teacher's identity and the teacher's stroke can be elucidated by the theoretical framework of Transactional Analysis (TA) in the context of interpersonal relationships in education (Berne, 1988). In this respect, TA may be characterized as "a theory of personality and a structured psychotherapy for personal transformation and progress" (Stewart & Joines, 1987, p. 3). According to the theory, a "stroke" is any action a person does to demonstrate that they are aware of the people around them (Shirai, 2006). In conclusion, the behaviors of giving and getting strokes may satiate a person's insatiable emotional need for acknowledgment and praise from others (Berne, 1988). Accordingly, it could be argued that the stroking behaviors of EFL teachers can contribute to the acknowledgment and recognition of their identity. That is why the teacher's identity as a concept in which the teacher's stroking behavior could be embedded can predict the teacher's stroking behavior.

The predictive/associative relationship between EFL teachers' TPACK and their stroke is also an unexplored research line as the review of the past literature indicated. The predictive relationship, however, could be accounted for through the concept of teacher credibility. The degree to which a teacher is seen as trustworthy, dependable, or credible when applied to the educational setting, is referred to as

teacher credibility (McCroskey, 1998). According to McCroskey and Teven (1999), the three components of teacher credibility, namely goodwill, competence, and trustworthiness respectively refer to instructors' concern for students' best interests, expertise in their field, and honesty. Accordingly, it could be argued that for an EFL teacher to have successful stroking behaviors, the teacher needs to have good knowledge of the subject matter, including TPACK, to serve best in an educational context. Because the teacher's TPACK can function as a tool in her hands to fulfill students' educational needs and consequently gain greater credibility in the educational context; the credibility can pave the way for the teacher to provide more stroke that in a reciprocal relationship can result in more credibility. Therefore, a teacher's TPACK can act as a predictor of the stroking behaviors an EFL teacher practices in instructional settings.

The past literature on the association between the instructor's immunity and the instructor's stroke is in its infancy yielding no previous study in this regard. However, the novel predictive association between the two concepts found in the current study can be consistent with the statement that "teacher immunity affects almost everything that teachers do in their careers" (Hiver, 2015, p. 226). Moreover, the predictive/associative relationship between EFL teachers' immunity and their stroke can be explained by the mediating role that the teacher's stroke can play with other variables that are correlated with the teacher's immunity. For example, teacher stroke as a mediating variable can explain the relationship between EFL instructors' engagement and their immunity. In this respect, Noughabi et al.'s (2020) findings demonstrated that "various aspects of teacher engagement (i.e., cognitive engagement, emotional engagement, social engagement with learners, and social engagement with colleagues) could affect EFL teachers' immunity" (p. 7). It might be argued that through stroking behaviors, teachers strengthen their engagements with both colleagues and learners, thereby creating a pathway toward developing immunity. However, this mediating role explained for the teacher's stroke needs to be supported by further empirical studies.

CONCLUSIONS AND IMPLICATIONS

The current study in its approach to the four main variables of the research was novel in Iran. Accordingly, the conclusions reached in the current study can be quite insightful for the EFL community. The results of the study could help the researchers to conclude that there was a statistically significant association between the study's key factors, including teacher identity, immunity, TPACK, and stroke. Additionally, it was discovered that the predictors of the model that the present research produced, that is the Teacher's Identity, Teacher's Immunity, and Teacher's TPACK, could all strongly predict the Teacher's Stroke, as the dependent variable of this research.

Considering the results found in the present research, this kind of study has important implications for the practice of pre- and in-service EFL instructors, instructor trainers, and administrators in charge of instructor employment initiatives, among other stakeholders in EFL settings. It is obvious that teachers are important to education and that both internal and external variables affect their performance. Hence, students' motivation, learning, achievements, and the educational system efficacy in general, all depend on several teacher's attributes, including but not limited to the teacher's stroke, teacher's immunity, teacher's TPACK, and teacher's Identity, which are shaped by behavioral, psychological, and instructional factors (Derakhshan et al., 2021). EFL instructors must be trained and mentally equipped to handle challenges since teaching is a difficult and stressful profession that puts strain on them. By learning about the demands of teaching languages and the fact that this line of work is well known for its emotional strains, adversities, and stress, in addition to the content, pedagogical, and technological knowledge challenges that EFL teachers may face, teachers can benefit from this line of research. Similar to this, EFL instructors may build an affluent environment for their educational settings where EFL teachers can have professional growth and EFL learners can experience excellent education by learning how to cope with these challenges and demands via developing necessary techniques.

Another implication of the study is to recommend teacher educators provide content and pedagogical knowledge in their teacher education programs with pre-service and in-service teachers regarding the concepts of the teacher's stroke, teacher's identity, teacher's immunity, teacher's TPACK as they are correlated with one another, according to the results obtained in the current study. They can learn the concepts, negotiate different aspects of the concepts, and develop their basic knowledge for their future careers in teacher education programs. The presentation of such concepts and how important they could be in teacher education programs can prepare the teachers to enact their professional knowledge in their instructional settings, paving the way to have more successful English language in EFL contexts.

The findings of this research can also be advantageous for individuals responsible for hiring qualified EFL instructors for educational programs. Only EFL teachers who exhibit a professional identity with stable immunity and those who possess a sufficient understanding of various facets of teacher competence, such as knowledge of stroke and TPACK, among other content, language, psychology, sociology, instructional communication, and cultural knowledge, are allowed to pass the gate

in this regard.

Conflict of Interest: On behalf of all authors, the corresponding author states that there is no conflict of interest.

Funding: No funding was received for conducting this study.

Authors' Contribution: All authors made equal contributions to the development of the manuscript.

Informed Consent: Informed consent was obtained from all individual participants included in the study.

Ethical Approval Statement: The questionnaire and methodology for this study were approved by the local Research Ethics committee of the Islamic Azad University (Ethics approval number: 1622412282).

REFERENCE

- Aneja, G. A. (2016). (Non) native speakers: Rethinking (non) nativeness and teacher identity in TESOL teacher education. *TESOL Quarterly*, 50(3), 572-596.
- Burroughs, N., Gardner, J., Lee, Y., Guo, S., Touitou, I., Jansen, K., ... & Schmidt, W. (2019). A review of the literature on teacher effectiveness and student outcomes. *Teaching for excellence and equity: Analyzing teacher characteristics, behaviors and student outcomes with TIMSS*, 7-17.
- Bostancıoğlu, A., & Handley, Z. (2018). Developing and validating a questionnaire for evaluating the EFL 'Total Package': Technological Pedagogical Content Knowledge (TPACK) for English as a Foreign Language (EFL). *Computer-assisted language learning*, 31(5-6), 572-598.
- Bagheri, M. (2020). Validation of Iranian EFL Teachers' Technological Pedagogical Content Knowledge (TPACK) Scale. *TESL-EJ*, 24(2), n2.
- Berne, E. (1988). *Games people play: The psychology of human relationships*. Grove Press.
- Coombe, C. (2020). Quality education begins with teachers: What are the qualities that make a TESOL teacher great? In J. D. M. Agudo (Ed.), *Quality in TESOL and teacher education: From a results culture towards a quality culture* (pp. 173-184). Routledge. DOI: <https://doi.org/10.4324/9780429198243-18>
- Chai, C. S., Chin, C. K., Koh, J. H. L., & Tan, C. L. (2013). Exploring Singaporean Chinese language teachers' technological pedagogical content knowledge and its relationship to the teachers' pedagogical beliefs. *The Asia-Pacific Education Researcher*, 22, 657-666.
- Derakhshan, A., Coombe, C., Zhaleh, K., & Tabatabaieian, M. (2020). Examining the Roles of Continuing Professional Development Needs and Views of Research in English Language Teachers' Success. *Tesl-Ej*, 24(3), n3.
- Derakhshan, A., Doliński, D., Zhaleh, K., Janebi Enayat, M., and Fathi, J. (2021). *A Cross-Cultural Study of Iranian and Polish Higher Education Students' Academic Engagement in Terms of Teacher Care and Teacher-student Rapport*. Gorgan: Golestan University, Grant Number: 992151.
- Demmon-Berger, D. (1986). *Effective Teaching: Observations from Research*. Publication Sales, American Association of School Administrators, 1801 North Moore Street, Arlington, VA 22209 (Stock No. 021-00173; single copies, \$5.00 prepaid; sets of 25 copies, \$25.00; further quantity discounts available).
- De Costa, P. I., & Norton, B. (2017). Introduction: Identity, transdisciplinarity, and the good language teacher. *The Modern Language Journal*, 101(S1), 3-14.
- Elizabeth, C. L. M., May, C. M. H., & Chee, P. K. (2008). Building a model to define the concept of teacher success in Hong Kong. *Teaching and teacher education*, 24(3), 623-634.
- Frymier, A. B., Goldman, Z. W., & Claus, C. J. (2019). Why nonverbal immediacy matters: A motivation explanation. *Communication Quarterly*, 67(5), 526-539.
- Freedman, A. (1993). Show and tell? The role of explicit teaching in the learning of new genres. *Research in the Teaching of English*, 222-251.
- Hiver, P. (2015). Once burned, twice shy: The dynamic development of system immunity in language teachers. In Z. Dörnyei, P. D. MacIntyre, & A. Henry (Eds.), *Motivational Dynamics in Language Learning. Multilingual Matters* (pp. 214-237).
- Hiver, P. V. (2016). *Tracing the signature dynamics of language teacher immunity* (Doctoral dissertation, University of Nottingham).
- Hiver, P., & Dörnyei, Z. (2017). Language teacher immunity: A double-edged sword. *Applied Linguistics*, 38(3), 405-423.

- Hiver, P. (2017). Tracing the signature dynamics of language teacher immunity: A retrodictive qualitative modeling study. *The Modern Language Journal*, 101(4), 669-690.
- Haseli Songhori, M., Ghonsooly, B., & Afraz, S. (2018). Language teacher immunity among Iranian EFL teachers: A self-organization perspective. *Iranian Journal of English for Academic Purposes*, 7(1), 128-143.
- Huang, I. C. (2014). Contextualizing teacher identity of non-native-English speakers in US secondary ESL classrooms: A Bakhtinian perspective. *Linguistics and Education*, 25, 119-128.
- Hahs-Vaughn, D. L., & Lomax, R. G. (2020). Multiple linear regression. *Statistical Concepts*, 527-599.
- Hayes, A. F., & Cai, L. (2007). Using heteroskedasticity-consistent standard error estimators in OLS regression: An introduction and software implementation. *Behavior research methods*, 39, 709-722.
- Irajzad, F., & Shahriari, H. (2017). Student socioeconomic status and teacher stroke: A case of female students in Iran. *Discourse and Communication for Sustainable Education*, 8(1), 129-144.
- Johnston, B., Pawan, F., & Mahan-Taylor, R. (2005). The professional development of working ESL/EFL teachers: A pilot study. *Second language teacher education: International perspectives*, 53-72.
- Jiang, L., Yuan, K., & Yu, S. (2021). Transitioning from pre-service to novice: A study on Macau EFL teachers' identity change. *The Asia-Pacific Education Researcher*, 30, 11-21.
- Kyriacou, C. (2001). Teacher stress: Directions for future research. *Educational Review*, 53(1), 27-35.
- Kayi-Aydar, H. (2015). Multiple identities, negotiations, and agency across time and space: A narrative inquiry of a foreign language teacher candidate. *Critical Inquiry in Language Studies*, 12(2), 137-160.
- Kavanoz, S., Yüksel, H. G., & Özcan, E. (2015). Pre-service teachers' self-efficacy perceptions on Web Pedagogical Content Knowledge. *Computers & Education*, 85, 94-101.
- Koehler, M., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)? *Contemporary issues in technology and teacher education*, 9(1), 60-70.
- Kadkhodaie, S., Talebinejad, M. R., & Shahrokhi, M. (2024). *Iranian EFL Teachers' Immunity, Technological Pedagogical Content Knowledge (TPACK), Identity Construction, and Stroke*. Unpublished Ph. D. Thesis, Shahreza Branch, Islamic Azad University, Iran.
- Low, M., Davey, H., & Davey, J. (2012). Tracking the professional identity changes of an accountancy institute: The New Zealand experience. *Journal of Accounting & Organizational Change*, 8(1), 4-40.
- Liu, M. H., & Kleinsasser, R. (2015). Exploring EFL teachers' knowledge and competencies: In-service program perspectives.
- Liou, I. Y. S. (2008). *English as an international language and teachers' professional identity* (Doctoral dissertation, Deakin University).
- Mercer, S. (2018). Psychology for language learning: Spare a thought for the teacher. *Language Teaching*, 51(4), 504-525.
- McCroskey, J. C. (1998). *An introduction to communication in the classroom* (2nd ed.). Tapestry Press.
- McCroskey, J. C., & Teven, J. J. (1999). Goodwill: A reexamination of the construct and its measurement. *Communications Monographs*, 66(1), 90-103.
- Morgan, B., & Clarke, M. (2011). Identity in second language teaching and learning.
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054.
- Mei, B., Brown, G. T., & Teo, T. (2018). Toward an understanding of preservice English as a foreign language teachers' acceptance of computer-assisted language learning 2.0 in the People's Republic of China. *Journal of Educational Computing Research*, 56(1), 74-104.
- Noorbakhsh, Z., Pishghadam, R., & Saboori, F. (2018). Stroke and gender identity in teacher success: From learners' viewpoints. *Sri Lanka Journal of Social Sciences*, 41(1), 39-48.
- Namaghi, F. R. (2016). The influence of stroke on "willingness to attend classes" (WTAC) and foreign language achievement: A case of Iranian EFL learners (unpublished master's thesis). *Mashhad, Iran: Ferdowsi University of Mashhad, Iran*.
- Noughabi, M. A., Amirian, S. M. R., Adel, S. M. R., & Zareian, G. (2020). The association of experienced in-service EFL teachers' immunity with engagement, emotions, and autonomy. *Current Psychology*, 1-10.
- Pishghadam, R., Baghaei, P., & Shahriari Ahmadi, H. (2011). Development and validation of an English language teacher competency test using item response theory. *International Journal*, 8(9), 54-68.
- Pishghadam, R., & Khajavy, G. H. (2014). Development and validation of the student stroke scale and examining its relation with academic motivation. *Studies in Educational Evaluation*, 43, 109-114.

- DEVELOPING A CONCEPTUAL MODEL FOR THE INTERPLAY AMONG TEACHERS' STROKE, IDENTITY, IMMUNITY, AND TPACK: EFL TEACHERS IN FOCUS
- Pishghadam, R., & Farkhondefal, E. (2017). From navazesh (physical strokes) to navazeh (mental strokes): A look into the concept of stroking in teaching a second language. *Language and Translation Studies (LTS)*, 49(4), 1-13.
- Pishghadam, R., Ghonsooly, B., & Zhaleh, K. (2018). Effects of conceptions of intelligence and ambiguity tolerance on teacher burnout: A case of Iranian EFL teachers. *Journal of Research in Applied Linguistics*, 9(2), 118-140.
- Pishghadam, R., Derakhshan, A., & Zhaleh, K. (2019). The interplay of teacher success, credibility, and stroke with respect to EFL students' willingness to attend classes. *Polish Psychological Bulletin*, 50(4), 284-292.
- Pishghadam, R., Derakhshan, A., Zhaleh, K., & Al-Obaydi, L. H. (2021). Student's willingness to attend EFL classes with respect to teachers' credibility, stroke, and success: a cross-cultural study of Iranian and Iraqi students' perceptions. *Current Psychology*, 1-15.
- Peng, J. E., & Woodrow, L. (2010). Willingness to communicate in English: A model in the Chinese EFL classroom context. *Language learning*, 60(4), 834-876.
- Pierson, W. J. (2003). Reflection on the process of learning the work of nurses during practice experiences (Unpublished doctoral dissertation). Simon Fraser University, Canada.
- Parks, P. H. I. L. I. P. P. A. (2017). Understanding the connections between second language teacher identity, efficacy, and attrition: a critical review of recent literature. *Journal of Belonging, Identity, Language, and Diversity*, 1(1), 75-91.
- Pituch, K. A., & Stevens, J. P. (2016). *Applied Multivariate Statistics for the Social Sciences*. 6th ed. New York and London.
- Rajabnejad, F., Pishghadam, R., & Saboori, F. (2017). On the influence of stroke on willingness to attend classes and foreign language achievement. *Applied Research on English Language*, 6(2), 141-158.
- Rahmati, T., Sadeghi, K., & Ghaderi, F. (2019). English as a foreign language teacher immunity: An integrated reflective practice. *Iranian Journal of Language Teaching Research*, 7(3 (Special Issue)), 91-107.
- Rodgers, C. R., & Scott, K. H. (2008). The development of the personal self and professional identity in learning to teach. In *Handbook of research on teacher education* (pp. 732-755). Routledge.
- Rudolph, N. (2016). Negotiating borders of being and becoming in and beyond the English language teaching classroom: Two university student narratives from Japan. *Asian Englishes*, 18(1), 2-18.
- Stronge, J. H., Ward, T. J., Tucker, P. D., & Hindman, J. L. (2007). What is the relationship between teacher quality and student achievement? An exploratory study. *Journal of Personnel Evaluation in Education*, 20, 165-184.
- Soodmand Afshar, H., & Doosti, M. (2013). Exploring the characteristics of effective Iranian EFL teachers from students' and teachers' perspectives. *Iranian Journal of Applied Language Studies*, 6(1), 205-230.
- Shirai, S. (2006) How transactional analysis can be used in terminal care. *International Congress Series*, 1278, 179-184. DOI: <https://doi.org/10.1016/j.ics.2005.12.052>
- Stewart, I., & Joines, V. (1987). *TA today: A new introduction to transactional analysis*. Nottingham: Lifespace Pub.
- Sedikides, C., & Brewer, M. B. (2015). *Individual self, relational self, and collective self*. Psychology Press.
- Skorikov, V. B., & Vondracek, F. W. (2011). Occupational identity. *Handbook of identity theory and research*, 693-714.
- Saudelli, M. G., & Ciampa, K. (2016). Exploring the role of TPACK and teacher self-efficacy: An ethnographic case study of three iPad language arts classes. *Technology, Pedagogy, and Education*, 25(2), 227-247.
- Tsakissiris, J. (2015). *The role of professional identity and self-interest in career choices in the emerging ICT workforce* (A Submitted thesis in fulfillment of the requirements for the degree of Master of Business (Research)). The Queensland University of Technology.
- Tsui, A. (2003). *Understanding expertise in teaching: Case studies of second language teachers*. Cambridge University Press.
- Trent, J. (2017). Discourse, agency and teacher attrition: Exploring stories to leave by amongst former early career English language teachers in Hong Kong. *Research Papers in Education*, 32(1), 84-105.
- Tseng, J. J., Chai, C. S., Tan, L., & Park, M. (2020). A critical review of research on technological pedagogical and content knowledge (TPACK) in language teaching. *Computer Assisted Language Learning*, 35(4), 948-971.

- Vitanova, G. (2016). Exploring second-language teachers' identities through multimodal narratives: Gender and race discourses. *Critical Inquiry in Language Studies*, 13(4), 261-288.
- Wolff, D., & De Costa, P. I. (2017). Expanding the language teacher identity landscape: An investigation of the emotions and strategies of an NNEST. *The Modern Language Journal*, 101(S1), 76-90.
- Yazdanpour, H. (2015). Constructing and validating a Teacher Stroke Scale and examining its relationship with burnout (Master's thesis). The *Ferdowsi University of Mashhad, Mashhad, Iran*.
- Yazan, B. (2017). It just made me look at language in a different way: ESOL teacher candidates' identity negotiation through teacher education coursework. *Linguistics and Education*, 40, 38-49.
- Yazan, B. (2018). A conceptual framework to understand language teacher identities. *Journal of Second Language Teacher Education*, 1(1), 21-48.
- Yazan, B., & Rudolph, N. (Eds.). (2018). *Criticality, teacher identity, and (in) equity in English language teaching*. Berlin: Springer International Publishing.
- Yang, S. (2018, January). Riding the waves of augmented reality in preservice EFL teacher education: Model development. In *Proceedings of the 6th International Conference on Information and Education Technology* (pp. 185-189).