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Constructing and validating a language teachers' temporal intelligence scale and examining its relationship with teacher burnout

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ABSTRACT

The purpose of this study was to design and validate a scale to measure language teachers' temporal intelligence and to explore its role in teacher burnout. To this aim, 210 English as Foreign Language (EFL) teachers, teaching at different language institutes were asked to complete two questionnaires: the newly-designed language teachers' temporal intelligence scale (LTTI-S) and the Maslach Burnout Inventory (MBI). First, Rasch measurement was used to substantiate the construct validity of the LTTI-S. Next, multiple correspondence analysis and regression were run, which revealed significant relationships between temporal intelligence and the three subconstructs of burnout (emotional exhaustion, depersonalization, and personal accomplishment). Moreover, the results of t-test and one-way ANOVA demonstrated that female teachers' temporal intelligence is significantly higher than their male counterparts and teachers with higher academic degrees have significantly higher temporal intelligence. Finally, the results were discussed and implications were provided in the context of language education.

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Temporal intelligence; burnout; Rasch analysis; multiple correspondence analysis; regression; EFL teachers

Introduction

Academic interest in time-related individual differences has started from the early 1900s. Through the years, different constructs and dimensions have been proposed regarding the concept of time. A new concept that has emerged from the time literature is 'Temporal Intelligence'. It has long been established that intelligence is a multifaceted trait, hence the terms multiple intelligences (Gardner 1993), emotional intelligence (Salovey and Meyer 1990), and narrative intelligence (Randall 1999) have come into being. Temporal intelligence, as another offspring of the pluralization of intelligence, focuses on the relationship between individuals' behavior, cognition, and affect regarding time in reference to themselves and others (Clemens and Darlymple 2005).

As the definition of temporal intelligence suggests, it can be an important ability in teachers, for whom time is a valuable asset in the teaching process. Time is one of the major concepts involved in classroom management, which is an area of concern to teachers. Managing the classroom is the way that teachers manage students' learning by organizing and controlling what happens in their classroom (Scrivener 2012). This area is complex and includes many components from managing classroom facilities, interacting with students, establishing and maintaining appropriate behavior and organizing the lesson. All of these entail awareness of how time is being spent. After all, teachers are supposed to implement a syllabus in a fixed period of time. Furthermore, they are orchestrators

of every moment of the class. Thus, teachers have one of the most time-sensitive jobs. Most of the research on time-related individual differences has been carried out in the fields of psychology, management and organization studies, marketing, consumer behavior and sociology (Francis-Smythe and Robertson 1999) and rarely in education. More particularly, the construct of temporal intelligence has only been defined for leaders and managers. Since teachers are leaders of their classrooms, this construct can also apply to them.

One of the issues that commonly afflict teachers is burnout. The burnout phenomenon is, 'a chronic state of physical, emotional and mental exhaustion that arises in personnel from the cumulative demands of their work' (Goddard, O'Brien, and Goddard 2006, 857). Burnout develops gradually as a result of extensive and prolonged work-related stress (Freudenberger 1974; Holland 1982). Although burnout affects many types of people, those who deal directly with humans in their occupation are more likely to experience it (Farber 2000). Since teachers are constantly involved with their students, their job is one of the most illustrative of occupations in which direct service is given to humans. The international concern with teacher stress and burnout stems from a general concern to improve the quality of teachers' lives, and mounting evidence that prolonged occupational stress can lead to both mental and physical ill-health (Kyriacou 1987). Moreover, burnout may negatively affect teachers' quality of teaching and their strength of professional identity (Kremer and Hofman 1985). Looking at the issue from a larger perspective, a burnt-out teacher is a major dysfunction not only in the workplace, but more importantly in the society and the whole educational system (Shukla and Trivedi 2008).

From the bulk of research on the topic, a few studies have investigated the role of time-related variables in teacher burnout. For example, Peeters and Rutte (2005) examined the interaction effects of time management, work demands and autonomy on burnout in elementary school teachers and found that the combination of high work demands and low autonomy lead to burnout for teachers low in time management. In another study also done in elementary schools, managing time constraints was found to systematically predict dimensions of burnout (Kokkinos 2007). Emotional exhaustion was most strongly related to time pressure in Skaalvic and Skaalivic (2009). However, none of these studies has included temporal intelligence, which is a more holistic concept in comparison with other time-related variables. In fact, as its definition suggests, temporal intelligence includes many time-related constructs at the same time. Therefore, it may be a better association for teacher burnout. Moreover, despite the existence of research on teacher burnout, only some studies (e.g. Ghanizadeh and Ghonsooly 2014; Hiver 2017; Hiver and Dornyei 2015; Pishghadam et al. 2014; Pishghadam and Sahebjam 2012) have examined teachers' burnout in language teaching contexts. Therefore, this study attempts to first of all, introduce the concept of temporal intelligence into the field of language education and secondly, to reveal its possible associations with language teacher burnout. In the following sections, a brief account of the background of the study is provided.

Temporal intelligence

Temporal intelligence was first introduced by Clemens and Darlymple (2005) to describe the importance of time in leadership, notably its role in decision making and influencing followers. It refers to a leader's cognitions and behaviors related to time with reference to the self and the individuals that he or she is responsible for leading (Doyle and Francis-Smythe 2009). Formerly, Francis-Smythe and Robertson (1999) had introduced the notion of 'Time Personality', which concerns individual differences related to time. The scale they had designed comprised of five factors, i.e. leisure time awareness, punctuality, planning, polychronicity and impatience. They discussed their findings in the context of the role time personality might play in moderating the effects that differing organizational structures and changing work demands might have in organizational settings. The individual difference factor of time personality refers to self-directed thoughts, behaviors and attitudes towards time

(Francis-Smythe and Robertson 1999) whereas follower-referenced ones measure those directed towards followers (Doyle and Francis-Smythe 2011).

As mentioned above, the self-referenced temporal practices are equivalent to the notion of time personality, proposed by Francis-Smythe and Robertson (1999). They found this to be an individual difference variable comprised of a five dimension structure, including time awareness, punctuality, planning, polychronicity and impatience. In relation to follower-referenced temporal practices, a framework has been drawn through repertory grid analysis by Doyle and Francis-Smythe (2008) to propose that there are 13 dimensions of time. These 13 dimensions include the following: deadlines, decisive timing, pace, co-ordination, temporal perspective interaction, breaks, time buffers, time allocation, quality and speed, quality vs. Speed, time boundaries between work and non-work, autonomy, and timelessness.

Based on these self-referenced and follower-references dimensions, Doyle and Francis-Smythe (2008) developed a psychometric measure of Temporal intelligence (TIQ) defining it as a leader's cognitions and behaviors related towards time with reference to the self and the individuals being led. After distributing the questionnaire to 203 leaders, and conducting exploratory factor analysis, eight factors were obtained, i.e. time personality and job role characteristics, pace, deadline-oriented behavior, autonomy, flexing speed and quality, breaks in workflow, autocratic leadership, and temporal depth (Doyle and Francis Smythe 2009). The temporal intelligence questionnaire developed by Doyle and Francis-Smythe is proposed to represent individual differences in leaders' (including management roles) time related thoughts, attitudes and behaviors directed towards themselves and their followers. The reason for the development of this questionnaire was 'their concern with the contemporary research arena that a preponderance of attention is directed towards the outcomes of leadership effectiveness rather relevant individual characteristics' (Doyle and Francis-Smythe 2008). They recognized that there is a need to delve into leaders' temporally related individual characteristics.

Teacher burnout

Teaching is 'charged with positive emotion' (Hargreaves 1998, 835) and involves 'human nurturance, connectedness, warmth and love' (Hargreaves 1994, 175). Therefore, it can be one of the most rewarding experiences. On the other hand, teaching is a stressful job (Borg, Riding, and Falzon 1991; Travers and Cooper 1996). In comparison with other professions, teachers show high levels of exhaustion and cynicism (as cited in Hakanen, Bakker, and Schaufeli 2006), which pave the way for feelings of burnout. A very common definition of burnout is 'a three dimensional syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that occurs among individuals who work with people in some helping capacity' (Maslach 1982, 3).

In order to find out the probable sources of teacher burnout, Chang (2009) reviewed the existing literature on the construct and concluded that there are three potential sources, i.e. individual, organizational and transactional. The individual source focuses on 'who' experiences burnout, while the organizational and transactional sources relate to 'what' makes teacher burnout. Farber's (2000) study also demonstrated three types of burnout using teachers as the prototype, i.e. worn-out, classic, and under-challenged. To clarify, a worn-out individual is one who gives up in the face of stress. A classic burned-out individual is one who works increasingly hard in confronting stress. Finally, an under-challenged individual is one who is faced with monotonous and repetitive work conditions, and therefore is not stimulated enough. In a more recent categorization, three types of burnout among teachers were identified, these being; (a) the 'Laissez-Faire' teacher, (b) the 'Well-Adjusted' teachers, and (c) the 'Distressed' teachers (Jin, Noh, Shin and Lee, 2015). Teachers in the first group do not feel confident with their job and they do not invest enough time and effort into their profession. Well-adjusted teachers have low levels of emotional exhaustion and depersonalization and a high level of personal accomplishment. Distressed teachers on the other hand, have high confidence in their job, but due to their exhaustion they cannot function well.

Research has shown that many personal, social or institutional variables affect burnout. Teachers' coping strategies (Hakanen, Bakker, and Schaufeli 2006), teacher self-efficacy (Skaalvik and Skaalvik 2010), teachers' emotional intelligence and personality traits (Pishghadam and Sahebjam 2012), teachers' conceptions of assessment (Pishghadam et al. 2014), teacher attribution (Ghanizadeh and Ghonsooly 2014), lack of respect and gratitude from students and their parents (Park and Lee 2013), and the classroom environment (Dorman 2003) are some of the many variables that have been found to be influential in teacher burnout.

Purpose of the study

Time-related individual differences are one of those areas of individual differences which have not been explored much for teachers in general and language teachers in particular. The lack of research on language teachers' temporal intelligence and its possible effect on related variables shows a clear need to undertake such studies. On the other hand, since teacher burnout is an area of concern, any attempt to find factors that relate to it is worth conducting.

Moreover, studies done in different fields and occupations have revealed that females manage their time better than males (e.g. Botha 2013; Covic, Adamson, Lincoln, and Kench 2003; Kaya, Kaya, Pallos, and Kucuk 2012; Misra and McKean 2000). Therefore, since there is a relationship between gender and time-related individual differences, it can be hypothesized that female language teachers have higher temporal intelligence than their male counterparts. Another demographic variable that can be at play is academic degree. As previous studies done regarding the role of time management in academic achievement (e.g. Nasrullah and Khan 2015; Oyuga, Raburu, and Aloka 2016; Sayari, Jalagat, and Dalluay 2017) have demonstrated, there is a positive relationship between time management and academic achievement and success. Thus, it can be hypothesized that language teachers with higher levels of academic degree have higher temporal intelligence than those with lower ones.

Research questions

In light of the theoretical background presented above and the empirical studies reviewed, the present research focuses on English as a Foreign Language (EFL) teachers' temporal intelligence, its relationship with their job burnout and the effect of two variables, namely gender and academic degree on temporal intelligence. More specifically, the study addresses the following questions:

- (1) Does the newly-designed Language Teachers' Temporal Intelligence Scale (LTTI-S) demonstrate psychometric properties (reliability and validity)?
- (2) What is the relationship between temporal intelligence and job burnout in language teachers?
- (3) Can language teachers' level of temporal intelligence significantly predict their level of burnout?
- (4) Do language teachers' gender and academic degree significantly affect their temporal intelligence?

Methodology

Participants and setting

In order to select the participants, convenience sampling was done. From among the estimated 800 target population of EFL teachers in Mashhad, a city in northeastern Iran, about 25% (i.e. 210 teachers) were selected based on the researchers' convenience of access to them and their willingness to participate. They were all working in different private language institutes. They included 146 females and 64 males, their ages ranging from 18 to 56 (mean = 32). All of them had majored in different branches of English, i.e. Teaching English as a Foreign Language (TEFL), English Translation and English Literature. The distribution of their academic degree was the following: 32.8% were BA graduates, 46.2%

were MA graduates and finally, 21% were PhD candidates. The participants were ensured about the confidentiality of the study and verbal consent was obtained from all participants before beginning the procedure.

The setting chosen for this study was the private language institute sector. It should be mentioned that the English language teaching (ELT) system in Iran is divided into two sections i.e. public and private. The teachers working in the public sector are usually permanently employed, have a fixed salary and do not have any concerns about losing their job. In the private sector, on the other hand, the teachers are only employed temporarily and therefore, in order to gratify the needs and expectations of their students and the institution they work in, they must work hard. Thus, they are more susceptible to experience burnout. Furthermore, since their teaching performance in the classroom is vital to them, they pay more attention to their teaching practices.

Instrumentation

The language teachers' temporal intelligence scale (LTTI-S)

This scale was constructed based on the definition of temporal intelligence for leaders given by Doyle and Francis-Smythe (2008, 2009) as discussed in the theoretical framework. The subconstructs of temporal intelligence were adapted from the TiQ developed by Doyle and Francis-Smythe (2008, 2009). Thirteen follower-referenced temporal practices and two self-referenced temporal practices were included. The follower-referenced temporal practices included breaks, flexing speed and quality, decisive timing, autonomy, pace, timelessness, time allocation, temporal perspective interaction, time boundaries between work and non-work, co-ordination, temporal depth, external deadline-oriented behavior, and internal deadline-oriented behavior. The latter two are subdivisions of deadline-oriented behavior (Doyle and Francis Smythe 2008). The self-referenced temporal practices consisted of: planning, and punctuality. Situations are defined for each temporal practice and four options are given for each situation, which are rated from 1 to 4 (from lowest to highest level of temporal intelligence). The respondents have to select what they do in their classroom practices. It should be mentioned that in the original TiQ, the items are not in the form of situations.

In designing the items of the LTTI-S, the researchers tried to apply the subconstructs of temporal intelligence into language teaching. For example, for the subconstruct of planning, lesson planning was taken into account. For breaks in workflow, giving permission to students to socialize with each other and whether that is in their mother tongue or English was considered. Some subconstructs explicitly existed in teaching, but under different terms. A case in point is 'timelessness' (Mainemelis 2001), which is the same as 'flow' in the literature. When the activity is captivating and fully rewarding in and of itself, attention moves from the self to the activity and from time to the timeless depth of immediate experience (Csikszentmihalyi 1988). It is basically a sense of total involvement in an activity for the student, which links with the sense of feelings competent and challenged (Williams and Burden 1997).

To check content validity, think-aloud was conducted in order to ensure the comprehensibility of all items. Think-aloud is considered an appropriate method for checking readers' understanding of constructs and the comprehensibility, readability and legibility of items in a questionnaire (Dornyei 2007). To this aim, five English language teachers were asked to talk about the content of the items as they responded to them. Subsequently, modifications were made to the wording of some of the items to remove the ambiguities (see Appendix A for the whole scale). Finally, the scale was validated through Rasch analysis (Andrich 1978), which is explained in the Procedure section below.

The Maslach burnout inventory (MBI)

The instrument consists of 22 items that load onto a three factor structure: emotional exhaustion (nine items), depersonalization (five items), and personal accomplishment (eight items) (Maslach

and Jackson 1981). Emotional exhaustion describes feeling of being emotionally and psychologically tired by one's work, which can also manifest itself in form of physical fatigue. Depersonalization refers to unfeeling and callous responses towards one's clients or in this case, students; and finally personal accomplishment deals with feelings of success and competence in one's work (see Appendix B for sample items). Personal accomplishment is independent of the other subscales, meaning that 'it cannot be assumed to be the opposite of emotional exhaustions and /or depersonalization' (Maslach and Jackson 1981, 104). The items are rated in two different ways: firstly, by frequency, in which the items are scored on a 7-point frequency scale ranging from (0) 'never' to (6) 'every day'; secondly, by intensity, in which the items are scored on an 8-point scale ranging from (0) 'none' to (7) 'very much'. The higher the scores in frequency and intensity, the more the participants experience the feeling of burnout.

In this study, a Persian adaptation of the MBI was used. The Persian adaptation was developed over two decades ago (Badri Gargari 1995) and shows accurate indexes of reliability and validity. The Cronbach alpha reliability coefficient calculated for this study was .78. Moreover, in this study the frequency scale was used since Maslach and Jackson (1981) suggested that the frequency scale is more useful for measuring burnout. Moreover, results of the correlations between the frequency and intensity dimensions across items in the validation of the MBI by Maslach and Jackson (1981) revealed a moderate relationship between how often one experiences various feelings and how intensely they are felt.

Therefore, respondents were asked to indicate how many times they experienced these feelings: 0 = Never; 1 = A few times a year or less; 2 = Once a month or less; 3 = A few times a month; 4 = Once a week; to 5 = A few times a week; and 6 = Every day. The scores from personal accomplishment items were reversed.

Procedure

After getting permission from the language institutes, the researchers distributed the LTTI-S and the MBI to the teachers in person. Participants were informed that their responses would be kept confidential and used for the purpose of research only. From the 300 questionnaires that were distributed, 224 teachers returned them to the researchers and 14 were discarded due to incompleteness.

The data analysis consisted of many parts. First, Andrich's (1978) Rasch model, as implemented in Winsteps version 3.74, was used to determine the construct validity of the newly-designed LTTI-S. The Rasch model utilizes a mathematical model in the assessment and testing of construct validity of scales (Tennant and Conaghan 2007). The entire dataset with 15 items and 210 persons was subjected to Rasch analysis to evaluate the fit of data to the model and assess the unidimensionality of the LTTI-S. If these tests are satisfied and the assumptions are held, LTTI-S is a unidimensional Rasch scale and persons and items can be located on an interval scale.

The next step was to enter the data into SPSS (version 20). The first calculation conducted was multiple correspondence analysis (MCA), which allows one to analyze the pattern of relationships of several categorical independent and dependent variables and is known under different names, such as homogeneity analysis and optimal scaling (Abdi and Valentin 2007). MCA groups 'different variables into a space in such a way that objects with similar profiles are close together, and based on the proximity of variables, the researcher is expected to group and analyse these graphical representations' (Pishghadam and Sahebjam 2012, 230). Subsequently, in order to find out whether temporal intelligence can significantly predict burnout and its subconstructs, simple regressions were performed. Finally, to see if there is a significant difference between male and female teachers' level of temporal intelligence and to figure out if there is a significant difference among the temporal intelligence of the three levels of academic degree (BA, MA and PhD), an independent sample t-test and an ANOVA were run, respectively.

Results

Rasch analysis

In order to substantiate the construct validity of the scale, dimensionality and fit statistics for the items as well as category functioning were studied.

Dimensionality and Fit Statistics

The analysis of the 15 items yielded an item separation index of 4.48 with an item reliability of 0.95 and a person separation index of 2.12 with a person reliability of 0.82. The root mean square error (RMSE) for items and persons, were 0.09 and 0.40, respectively, suggesting an accurate measurement based on the criteria set by Bond and Fox (2007).

As the results of fit statistics in Table 1 depict, except for two items, all items fit the Rasch model following the criteria suggested by Bond and Fox (2007). Items which do not fit the Rasch model have infit mean square (MNSQ) indices outside the acceptable range of 0.70–1.30 (Bond and Fox 2007). While the major assumption underlying construct validity is the idea that all the items are operationalization of a single underlying construct (Bond and Fox, 2007), such items do not measure a single underlying construct uniformly and therefore contribute to multidimensionality. As Table 1 demonstrates, items 5 (autonomy) and 15 (temporal depth) have an infit MNSQ outside the acceptable boundary (1.61 and 1.59, respectively). These items are indicators of multidimensionality and therefore the scale is not unidimensional unless these misfitting items are omitted.

The items-persons map in Figure 1 below indicates that the construct represented by the items is well covered by the scale. As the figure suggests, items are spread all over the scale which implies that they cover a wide range of the LTTI-S constructs. Moreover, the majority of the thresholds have clustered towards the center of the scale, which indicates that the scale is a precise measurement of the construct and well-targeted for the sample.

Category label refers to the label given to each category and observed count shows the number of times each category is rated (Pishghadam, Baghaei, and Shayesteh 2012). Observed average is the mean of the trait estimates for all persons who chose the corresponding category (Bond and Fox 2007). These values should monotonically increase to indicate that those with higher trait estimates choose the higher categories and vice versa (Bond and Fox 2007). As shown by the rating scale statistics in Table 2, the scale functions properly since the observed averages increase with the category scores.

The acceptable range for the infit MNSQ indices is 0.6 to 1.4 (Bond and Fox 2007). The Infit MNSQs here range from .82 to 1.39, which is acceptable. Finally, thresholds are expected to increase with category values. Thresholds are estimated difficulties of observing one response category over the

Table 1. Item estimates and fit statistics.

Entry number	Total count	Measure	Infit MNSQ
1	210	.35	.79
2	210	.16	.95
3	210	.06	1.19
4	210	.49	.93
5	208	.45	1.61
6	210	.26	1.08
7	210	.21	.84
8	210	.24	.97
9	210	.25	.74
10	208	.35	.99
11	210	.02	1.19
12	210	.89	.93
13	210	.78	.86
14	210	.05	.71
15	210	.43	1.59

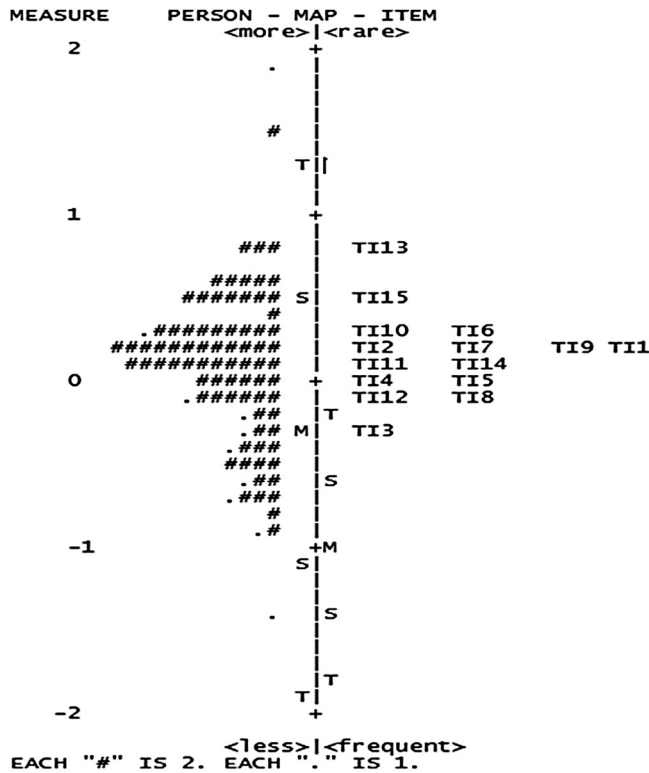


Figure 1. Category functioning and rating scale statistics.

category below (Linacre 1999). Since the first category has no lower category, there is no measure for it. Thresholds must fall into a range of 1.4 to 5 (Bond and Fox 2007). As can be seen in Table 4 the results obtained for the LTTI-S meet all the mentioned conditions.

On the whole, the LTTI-S is unidimensional and meets the criteria to fit to the Rasch model. The only change that was necessary to make was to delete items 5 and 15 from the scale. Therefore, the final version of the LTTI-S includes 13 items and this version was used in calculating the following parts of the results.

Multiple correspondence analysis (MCA)

To do MCA, it was necessary to re-codify the MBI and LTTI-S scoring. Thus, low scores (up to percentile 33), medium scores (from percentiles 33 up to 66) and high scores (percentiles 66 and higher) were obtained. The analysis demonstrated a 68% level of adjustment, which shows the accuracy of categorization. In order to do the mapping, close variable points were circled and categorized into three groups, i.e. A, B, and C. Figure 2 shows the relationships between the variables, which include temporal intelligence and the three subconstructs of burnout, i.e. depersonalization, emotional exhaustion and personal accomplishment.

Table 2. Rating scale statistics.

Category label	Observed count	Observed average	Infit MNSQ	Andrich threshold	Category measure
1	302	-.20	1.39	None	-2.22
2	624	.03	.82	-.89	-.61
3	1010	.74	.94	.04	.63
4	1210	1.30	.91	.85	2.20

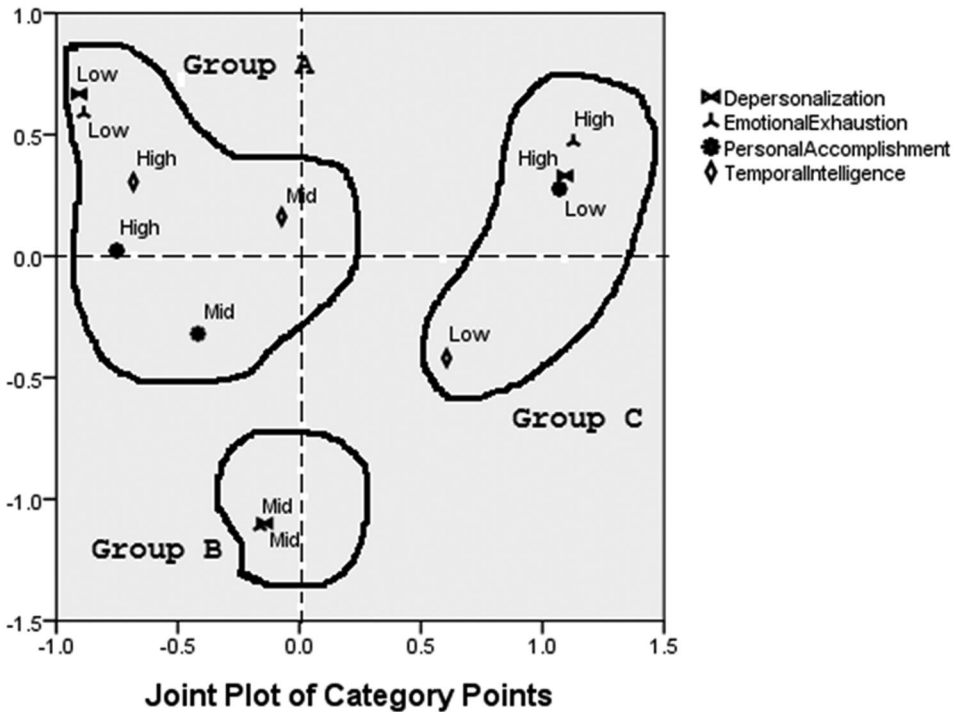


Figure 2. Joint description of LTTI-S and burnout level (MCA).

Figure 2 demonstrates that Group A includes teachers with high and mid scores in temporal intelligence and personal accomplishment, and low scores in depersonalization and emotional exhaustion. Group B represents teachers with mid scores in depersonalization and emotional exhaustion. Finally, Group C indicates teachers with high scores in depersonalization and emotional exhaustion, and low scores in temporal intelligence and personal accomplishment.

Regression analyses

Prediction of Emotional Exhaustion by Temporal Intelligence

A simple linear regression analysis was calculated to predict teacher burnout based on teachers' temporal intelligence. A significant regression equation was found $F(1, 208) = 30.484, p < .05$ with an R^2 of .128 (Table 3). This means that temporal intelligence can explain nearly 13% of the variance in emotional exhaustion. The negative regression coefficient (B) for temporal intelligence presents that there is a significantly negative correlation between temporal intelligence and emotional exhaustion ($B = -.428, p < .05$). Therefore, it can be predicted that teachers with higher levels of temporal intelligence, experience lower levels of emotional exhaustion.

Prediction of depersonalization by temporal intelligence

Table 4 presents the results of simple linear regression for prediction of temporal intelligence by depersonalization. The regression equation was found to be $F(1, 208) = 45.702, p < .05$ with R^2 of .180. Therefore, temporal intelligence accounts for 18% of the variance in depersonalization.

Table 3. Regression analysis for emotional exhaustion.

R	R^2	F	B	Model Sig.
.358	.128	30.484	-.428	.000

Table 4. Regression analysis for depersonalization.

<i>R</i>	<i>R</i> ²	<i>F</i>	<i>B</i>	Model Sig.
.424	.180	45.702	-.294	.000

Table 5. Regression analysis for personal accomplishment.

<i>R</i>	<i>R</i> ²	<i>F</i>	<i>B</i>	Model Sig.
.420	.176	44.496	.448	.000

The regression coefficient (*B*) for temporal intelligence indicates a significantly negative association between temporal intelligence and burnout ($B = -.294, p < .05$). Thus, teachers with higher temporal intelligence would feel less depersonalized in their interaction with their students.

Prediction of personal accomplishment by temporal intelligence

The same analysis as the two previous ones was done for the prediction of personal accomplishment by temporal intelligence. The results are demonstrated in Table 5. The regression equation for this model is $F(1, 208) = 44.496, p < .05$.

Since the R^2 equals .176, in this regression model nearly 18% of the variance can be predicted from the independent variable. Simply put, temporal intelligence can account for nearly 18% of personal accomplishment. Since the regression coefficient is positive ($B = .448$), we can say that temporal intelligence has a positive relationship with personal accomplishment and thus teachers with higher levels of temporal intelligence would experience higher levels of personal accomplishment.

The role of gender in temporal intelligence

In order to see if there is a significant difference between the temporal intelligence of male and female teachers, independent samples *t*-test was run.

As results of Table 6 reveal, there is a significant difference between the temporal intelligence of male and female teachers ($t = -2.121, p < .05$). In other words, the temporal intelligence of female teachers is significantly higher than their male counterparts.

The role of academic degree in temporal intelligence

To examine how teachers' academic degree affects their temporal intelligence, a one-way ANOVA was performed. First, descriptive statistics for the academic degree of the teachers were calculated (Table 7). As it can be seen, the higher the academic degree of the teachers, the higher their level of temporal intelligence is.

To see whether this difference is significantly different, *F* value was calculated. As seen in Table 8, a significant difference was found among the three groups of academic degree in terms of their temporal intelligence ($F = 15.856, p < .05$).

In order to locate the differences, Tukey Post Hoc test was run. Table 9 shows the results.

The results of Tukey demonstrated that there is a significant difference between the temporal intelligence of BA level with MA level and also BA level with PhD level teachers ($p < .05$).

Table 6. Independent samples *T*-test for temporal intelligence in male and female teachers.

Group	<i>N</i>	Mean	df	<i>t</i> -value	Sig.
Male	64	36.4531	208	-2.121	.035
Female	146	40.0			

Table 7. Descriptive statistics for academic degree of teachers.

	N	Mean	Std.Deviation	Minimum	Maximum
BA or BA student	69	35.2029	8.90733	18.00	49.00
MA or MA student	97	39.8866	6.81585	20.00	50.00
PhD candidate	44	42.6136	4.51981	26.00	47.00
Total	210	38.9190	7.69565	18.00	50.00

Table 8. One-way ANOVA for temporal intelligence with regard to EFL teachers' academic degree.

	Sum of squares	df	Mean square	F	Sig.
Between Groups	1644.280	2	822.140	15.856	.000
Within Groups	10,733.344	207	51.852		
Total	12,377.624	209			

Table 9. Multiple comparisons- Tukey HSD.

(I) Education	(J) Education	Mean difference (I-J)	Sig.
BA or BA student	MA or MA student	-4.68370*	.000
	PhD candidate	-7.41074*	.000
MA or MA student	PhD candidate	-2.72704	.096

*The mean difference is significant at the 0.05 level.

Discussion

This study sought to first of all design and validate a scale to evaluate language teachers' level of temporal intelligence based on the definition of the construct which exists in the literature. In order to answer the first research question, Rasch analysis was run, which revealed that except for two items the LTTI-S is unidimensional and demonstrates high reliability and validity.

Regarding the second research question, the results of MCA revealed associations between high temporal intelligence with high personal accomplishment and low temporal intelligence with high emotional exhaustion and high depersonalization. Moreover, the regressions performed concerning the third research question revealed that higher levels of temporal intelligence can significantly predict higher levels of personal accomplishment, lower levels of emotional exhaustion and depersonalization, and lower levels of burnout. Therefore, the results all indicate that there is a significantly negative relationship between teachers' temporal intelligence and teacher burnout. This is in line with Peeters and Rutte's (2005) study, which indicated a significant relationship between low time management and high burnout. However, in Peeters and Rutte's study, emotional exhaustion was the most predictive dimension of teacher burnout, while in this study it is the least predictive. Of course, as already mentioned, temporal intelligence is a more complex construct than time management. Moreover, among the three subconstructs of burnout, temporal intelligence accounted for the almost the same amount of variance in depersonalization and personal accomplishment (18%).

As for the effect of teachers' gender and academic degree on their temporal intelligence, which refers to the last research question, significant results were obtained. First of all, female teachers have significantly higher temporal intelligence than male ones, confirming the study's hypothesis. Secondly, teachers at the MA and PhD level had higher temporal intelligence than those at the undergraduate level. Therefore, academic education can significantly increase the level of temporal intelligence. It appears that teachers' own experiences as students and their educational development throughout the years aid them to become more aware of different temporal practices and their efficiency.

The instrument developed for assessing language teachers' temporal intelligence can raise awareness and foreground the role of time in classroom management. Moreover, it can be

employed along with other instruments that assess language teachers' competencies in different areas. It is also possible to adapt the instrument to teachers in general in future research. Some other implications also exist based on the results of the study. Considering that low temporal intelligence can lead to feelings of burnout, teacher educators should inform their trainees about different temporal practices in relation to themselves and their students and about which temporal practices signify higher levels of temporal intelligence. It is most probable that teachers are not aware of the different dimensions of time (Doyle and Francis-Smythe, 2008), and thereby informing them could make a huge difference in how they look at this complex concept and the way they manage it.

Some limitations to the study warrant a comment. First of all, the nature of the sample may have impacted on the results, since it only included teachers from the private sector. The sample was also restricted to EFL teachers, thus it is not generalizable to teachers in all fields. Furthermore, the measures were obtained from self-reported questionnaires, which leave room for future studies to use multiple measures to assess temporal intelligence and teacher burnout, thereby giving a more specific picture about these two variables and their effect on each other. Since the newly-designed scale may not be inclusive of all the subconstructs of temporal intelligence, further improvement and evaluation of the scale with broader sample populations is required. Moreover, the already known variables contributing to and predicting burnout in teachers were not included in the study, thus the results do not show the unique variation of temporal intelligence in predicting burnout. Also, the relationship between temporal intelligence and many other variables such as teacher success, teacher self-efficacy, teacher motivation and more general concepts like emotional intelligence, and different personality types could be investigated. Given that this study is the first endeavor in the EFL literature that has examined the role of temporal intelligence, it can be seen as a prelude to initiate other studies in this area. Temporal intelligence is certainly an uncharted territory that awaits further research.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References

- Abdi, H., and D. Valentin. 2007. "Multiple Correspondence Analysis." In *Encyclopedia of Measurement and Statistics*, edited by N. Salkind, 1–13. Thousand Oaks, CA: Sage.
- Andrich, D. 1978. "Application of a Psychometric Rating Model to Ordered Categories Which are Scored with Successive Integers." *Applied Psychological Measurement* 2: 581–594.
- Badri Gargari, R. 1995. "Psychological Syndromes in Teacher Burnout and Coping Mechanisms." Master thesis, Tarbiat Modares University.
- Bond, T., and C. Fox. 2007. *Applying the Rasch Model: Fundamental Measurement in the Human Sciences*. 2nd ed. New Jersey: Lawrence Erlbaum Associates.
- Borg, M. G., R. J. Riding, and J. M. Falzon. 1991. "Stress in Teaching: A Study of Occupational Stress and Its Determinants, Job Satisfaction and Career Commitment among Primary Schoolteachers." *Educational Psychology* 11: 59–75.
- Botha, R. J. 2013. "Time Management Abilities of School Principals According to Gender: A Case Study in Selected Gauteng Schools." *Africa Education Review* 10 (2): 364–380.
- Chang, M. L. 2009. "An Appraisal Perspective of Teacher Burnout: Examining the Emotional Work of Teachers." *Educational Psychology Review* 21: 193–218.
- Clemens, J. K., and S. Dalrymple. 2005. *Time Mastery: How Temporal Intelligence Will Make You a Stronger, More Effective Leader*. New York: Amacom Books.
- Covic, T., B. J. Adamson, M. Lincoln, and P. L. Kench. 2003. "Health Science Students' Time Organization and Management Skills: A Cross Disciplinary Investigation." *Medical Teacher* 25: 47–53.
- Csikszentmihalyi, M. 1988. "The Flow Experience and Its Significance for Human Psychology." In *Optimal Experience: Psychological Studies of Flow in Consciousness*, edited by M. Csikszentmihalyi, and I. S. Csikszentmihaly, 15–35. New York: Cambridge University Press.
- Dorman, J. P. 2003. "Relationship between School and Classroom Environment and Teacher Burnout: A LISREL Analysis." *Social Psychology of Education* 6: 107–127.
- Dornyei, Z. 2007. *Research Methods in Applied Linguistics*. Oxford: Oxford University Press.
- Doyle, A., and J. Francis-Smythe. 2008. "Development of the Temporal Intelligence Questionnaire." Paper presented at the British Academy of Management Annual Conference, Harrogate.
- Doyle, A., and J. Francis-Smythe. 2009. "Temporal Intelligence and Time Management." Paper presented at the 14th Congress of the European Association of Work and Organizational Psychology, Spain.
- Doyle, A., and J. Francis-Smythe. 2011. "The Nature of Temporal Intelligence in Leadership." Paper presented at the 15th European Congress of Work and Organizational Psychology, Netherlands.
- Farber, B. A. 2000. "Treatment Strategies for Different Types of Teacher Burnout." *Journal of Clinical Psychology* 56 (5): 675–689.
- Francis-Smythe, J., and I. Robertson. 1999. "Time-related Individual Differences." *Time and Society* 8 (2): 273–292.
- Freudenberger, H. J. 1974. "Staff Burnout." *Journal of Social Issues* 30: 159–165.
- Gardner, H. 1993. *Multiple Intelligences: The Theory and Practice*. New York: Basic Books.
- Ghanizadeh, A., and B. Ghonsooly. 2014. "A Tripartite Model of EFL Teacher Attributions, Burnout, and Self-regulation: Toward the Prospects of Effective Teaching." *Educational Research for Policy and Practice* 13: 145–166.
- Goddard, R., P. O'Brien, and M. Goddard. 2006. "Work Environment Predictors of Beginning Teacher Burnout." *British Educational Research Journal* 32: 857–874.
- Hakanen, J. J., A. B. Bakker, and W. B. Schaufeli. 2006. "Burnout and Work Engagement among Teachers." *Journal of School Psychology* 43: 495–513.
- Hargreaves, A. 1994. *Changing Teachers, Changing Times*. London: Teachers' College Press.
- Hargreaves, A. 1998. "The Emotional Practice of Teaching." *Teaching and Teacher Education* 14: 835–854.
- Hiver, P. 2017. "Tracing the Signature Dynamics of Language Teacher Immunity: A Retrospective Qualitative Modeling Study." *The Modern Language Journal* 101 (4): 669–690.
- Hiver, P., and Z. Dornyei. 2015. "Language Teacher Immunity: A Double-edged Sword." *Applied Linguistics* 38 (3): 405–423.
- Holland, R. P. 1982. "Special Educator Burnout." *Educational Horizons* 60: 58–64.
- Jin, Y. Y., H. Noh, H. Shin, and S. M. Lee. 2015. "A Typology of Burnout among Korean Teachers." *The Asia-Pacific Education Researcher* 24 (2): 309–318.
- Kaya, H., N. Kaya, A. O. Pallos, and L. Kucuk. 2012. "Assessing Time-management Skills in Terms of Age, Gender, and Anxiety Levels: A Study on Nursing and Midwifery Students in Turkey." *Nurse Education in Practice* 12 (5): 284–288.
- Kokkinos, C. M. 2007. "Job Stressors, Personality and Burnout in Primary School Teachers." *British Journal of Educational Psychology* 77 (1): 229–243.
- Kremer, L., and J. E. Hofman. 1985. "Teachers' Professional Identity and Burnout." *Research in Education* 34: 89–95.
- Kyriacou, C. 1987. "Teacher Stress and Burnout: An International Review." *Educational Research* 29 (2): 146–152.
- Linacre, J. M. 1999. "Investigating Rating Scale Category Utility." *Journal of Outcome Measurement* 3 (2): 103–122.
- Mainemelis, C. 2001. "When the Muse Takes It All: A Model for the Experience of Timelessness in Organizations." *Academy of Management Review* 26 (4): 548–565.
- Maslach, C. 1982. *Burnout, the Cost of Caring*. Englewood Cliffs, NJ: Prentice Hall.

- Maslach, C., and S. E. Jackson. 1981. "The Measurement of Experienced Burnout." *Journal of Organizational Behavior* 2 (2): 99–113.
- Misra, R., and M. McKean. 2000. "College Students' Academic Stress and its Relation to their Anxiety, Time Management, and Leisure Satisfaction." *American Journal of Health Studies* 16 (1): 41–51.
- Nasrullah, S., and M. S. Khan. 2015. "The Impact of Time Management on Students' Academic Achievements." *Journal of Literature, Languages and Linguistics* 11: 66–71.
- Oyuga, P. A., P. Raburu, and P. J. O. Aloka. 2016. "Relationship between Time Management and Academic Performance among Orphaned Secondary School Students of Kenya." *International Journal of Applied Psychology* 6 (6): 171–178.
- Park, Y. M., and S. M. Lee. 2013. "A Longitudinal Analysis of Burnout in Middle and High School Korean Teachers." *Stress and Health* 29 (5): 427–431.
- Peeters, M. A., and C. G. Rutte. 2005. "Time Management Behavior as a Moderator for the Job Demand-control Interaction." *Journal of Occupational Health Psychology* 10 (1): 64–75.
- Pishghadam, R., B. Adamson, S. Shayesteh, and F. Kan. 2014. "Conceptions of Assessment and Teacher Burnout." *Assessment in Education: Principles, Policy and Practice* 21 (1): 34–51.
- Pishghadam, R., P. Baghaei, and S. Shayesteh. 2012. "Construction and Validation of an English Language Teacher Creativity Scale (ELT-CS)." *Journal of American Science* 8 (3): 497–508.
- Pishghadam, R., and S. Sahebjam. 2012. "Personality and Emotional Intelligence in Teacher Burnout." *The Spanish Journal of Psychology* 15 (1): 227–236.
- Randall, W. L. 1999. "Narrative Intelligence and the Novelty of our Lives." *Journal of Aging Studies* 13: 11–28.
- Salovey, P., and J. D. Meyer. 1990. "Emotional Intelligence." *Imagination, Cognition and Personality* 9: 185–211.
- Sayari, K., J. Revenio, and V. Dalluay. 2017. "Assessing the Relationship of Time Management and Academic Performance of the Business Students in Al-Zahra College for Women." *European Business and Management* 3 (1): 1–8.
- Scrivener, J. 2012. *Classroom Management Techniques*. Cambridge: Cambridge University Press.
- Shukla, A., and T. Trivedi. 2008. "Burnout in Indian Teachers." *Asia Pacific Education Review* 9: 320–334.
- Skaalvik, E. M., and S. Skaalvik. 2009. "Does School Context Matter? Relations with Teacher Burnout and Job Satisfaction." *Teaching and Teacher Education* 25 (3): 518–524.
- Skaalvik, E. M., and S. Skaalvik. 2010. "Teacher Self-efficacy and Teacher Burnout: A Study of Relations." *Teaching and Teacher Education* 26: 1059–1069.
- Tennant, A., and P. Conaghan. 2007. "The Rasch Measurement Model in Rheumatology: What is It and Why Use It? When Should It be Applied, and What Should One Look for in a Rasch Paper?" *Arthritis and Rheumatism* 57 (8): 1358–1362.
- Travers, C. J., and C. L. Cooper. 1996. *Teachers Under Stress: Stress in the Teaching Profession*. London: Routledge.
- Williams, M., and R. L. Burden. 1997. *Psychology for Language Teachers: A Social Constructivist Approach*. Cambridge: Cambridge University Press.

Appendices

Appendix A: Items of the LTTI-S

(Planning)

1. Before going to class, I ----- make a lesson plan.
 - a. never (1)
 - b. sometimes (2)
 - c. usually (3)
 - d. always (4)
 (External deadline-oriented behavior)

2. I ----- manage to finish teaching the required material in the time set by the institution I work in.
 - a. never (1)
 - b. sometimes (2)
 - c. usually (3)
 - d. always (4)
 (Breaks)

3. During class time, I usually
 - a. give my students some break time so that they can socialize with each other. (4)
 - b. give my students some break time but insist that they speak to each other in English. (3)
 - c. only give breaks when the students ask for. (2)
 - d. don't give breaks at all. (1)
 (Internal deadline-oriented behavior)

4. When I assign homework to my students, I usually
 - a. stick to the deadline that I have set and don't accept work submitted after that. (4)
 - b. tell them that I will remove scores for each day that it is late. (3)
 - c. don't care if they don't hand in their work on the expected date. (2)
 - d. don't set deadlines at all. (1)
 (Autonomy)

5. In cases which no deadlines are set, I ----- allow students to manage their own time.
 - a. always (4)
 - b. usually (3)
 - c. sometimes (2)
 - d. never (1)
 (Flexing speed and quality)

6. When assigning a task to my students, I usually
 - a. only care that they get it done on time, whatever the quality. (2)
 - b. only insist on quality and don't show any sensitivity towards the time for its completion. (1)
 - c. expect a certain quality based on the time I assign for completing it. (4)
 - d. expect high quality in a short period. (3)
 (Decisive timing)

7. When I have to make a decision about an important issue related to the class, I usually
 - a. tend not to make a decision at all. (1)
 - b. leave the decision making for the last minute. (2)
 - c. try to make a decision at the appropriate time and care about the consequences of a delayed decision. (4)
 - d. make a decision at the appropriate time but don't care about the consequences of a delayed decision. (3)
 (Pace)

8. Overall, I'm the kind of teacher who
 - a. encourages students to speed up. (4)
 - b. encourages students to slow down. (2)
 - c. lets students work at their own pace. (3)
 - d. isn't sensitive to the speed of activities. (1)
 (Timelessness)

9. I find the kind of activities that are so fascinating that they totally engage students in their work, in such a way that they forget about passing of time:
- useless and try to avoid them as much as possible. (1)
 - useful but don't use them. (2)
 - useful and use them in class. (3)
 - useful and use them in class, and explain clearly to the students what I expect the outcome of the activity to be. (4)
- (Time allocation)
10. When setting a work activity during class time, I usually
- don't pay attention to time assignment. (1)
 - assign time based on the level and ability of the students. (4)
 - let the students assign time by themselves. (3)
 - assign time based on my own opinion. (2)
- (Temporal Perspective Interaction)
11. When a student encounters a failure, I usually
- bring his/her past success to attention. (4)
 - criticize his/her present status. (2)
 - warn him/her not to repeat the mistake in the future. (3)
 - don't show any reaction at all. (1)
- (Time boundaries between work and non-work)
12. I ----- contact my students or let them contact me through phone, email or social networks.
- never (1)
 - sometimes (2)
 - usually (3)
 - always (4)
- (Punctuality)
13. As a teacher, I ----- go to class on time.
- always (4)
 - usually (3)
 - sometimes (2)
 - never (1)
- (Co-ordination)
14. I am ----- about students' coming to class on time.
- strict (4)
 - flexible (3)
 - easygoing (2)
 - indifferent (1)
- (Temporal depth)
15. When organizing an activity or project for my class, I usually take into account the:
- background of the students (1)
 - present needs and abilities of the students (3)
 - future requirements and goals of the students (2)
 - all of the above (4)

Appendix B: Sample items of the MBI.

Emotional exhaustion.

I feel emotionally drained from my work.

Depersonalization.

I do not really care what happens to some students.

Personal accomplishment.

I deal very effectively with the problems of my students.