

Validation of the English Version of the Teacher Self-Regulation Scale in an EFL Context

¹Fatemeh Moafian and ²Shahla Ostovar

¹Department of English, Mashhad Branch, Islamic Azad University (IAU), Mashhad, Iran

²Department of Humanities, Damghan Branch, Islamic Azad University (IAU), Damghan, Iran

Abstract: The study validated the English version of the “Teacher Self-Regulation Scale” (TSRS) developed by Capa-Aydin, Sungur and Uzuntiryaki [9] in an EFL context. The scale includes 40 items and a filler. It assesses teachers’ self-regulation via nine subscales, namely, goal setting, intrinsic interest, performance goal orientation, mastery goal orientation, self-instruction, emotional control, self-evaluation, self-reaction and help-seeking. The sample of the study consisted of 707 EFL teachers who completed the English version of the TSRS completely out of the 897 teachers that were initially selected. The results of exploratory factor analysis revealed that all items were loaded on their respective factors except for three. After further examinations of the three items, two were excluded and one was retained. The obtained scale was subjected to a confirmatory factor analysis and the results supported the acquired factorial structure of the questionnaire. Cronbach's Alpha coefficient analyses were applied to estimate the internal consistencies of the English version of the TSRS. The findings of the reliability analyses were also satisfactory.

Key words: Confirmatory factor analysis • Exploratory factor analysis • Teacher self-regulation

INTRODUCTION

Self-regulation is defined by Zimmerman [1] as the process of generating thoughts, feelings and actions and systematically orienting toward the achievement of goals. If it works well, it helps a person to change his behavior and conform to rules, promises, plans, ideals, etc. However, if it fails, any types of human troubles or misfortunes can emerge. Self-regulation, therefore, can be defined as the key to success in life and if it doesn't work well, it is a contributing cause that accounts for the different types of human suffering. In other words, poor self-regulation might bring about underachievement, for example, by making people reluctant to persist while facing failure, less able to select suitable performance settings, less able to set and achieve goals and less able to persevere over a period of time [2].

Self-regulation can also be identified as significant due to its theoretical implications. Self-regulation is a crucial key to understand the nature of human self and how it operates. The study of psychological and behavioral processes is insufficient without this concept. Possibly, one of the critical steps in human evolution is

the emergence of self-regulation and it's a significant aspect of human nature - one of the features that differentiate the human psyche from the vast majority of other life forms on earth [2].

In educational settings, the self-regulation of learning is defined as people's competence to actively and intentionally manage their learning regarding cognition, motivation and behavior [3]. Paris and Winograd [4] enumerated three major features for self-regulated learning as follows: 1) *Awareness of thinking*: An important aspect of becoming self-regulated includes being aware of effective thinking and analyzing one's own thinking, 2) *Use of strategies*: A second aspect of self-regulated learning includes a person's mushrooming strategies repertoire for studying, learning, managing emotions, following aims, etc. Strategic students deem choices and alternatives before selecting tactics to resolve problems and, then, exert effort in applying the strategy. These options reveal self-regulated learning since they happen as a corollary to the cognitive analyses of alternate routes to problem solving and 3) *Sustained motivation*: The third feature of self-regulated learning is motivation for the reason that learning demands effort and options.

Self-regulated learning includes motivational decisions regarding the aim of an activity, the relative difficulty and the merit of the task, learners' subjective evaluations of their ability to carry out the task and the probable advantages of success or responsibility of failure. Depending on the motivation of the person, consciousness and reflection can bring about a variety of actions. According to educators and researchers' viewpoints, self-regulated learning is a set of positive attitudes, strategies and incentives for ameliorating thoughtful engagement with tasks; however, learners can also be self-directed to avert learning or to diminish challenges.

By resorting to self-regulation theories, researchers were able to analyze academic studying in the light of multidimensional processes that are used selectively by learners for success at school rather than as a unitary attribute of learners. These processes have been measured quantitatively, distinguished qualitatively and turned out to be highly predictive of academic accomplishment and motivation [3]. As Zimmerman [1] reported, self-regulated learners are proactive in trying to learn since they are cognizant of their weak and strong points and they are directed by goals they have set themselves and also by task-related strategies. An important characteristic of these learners is that they monitor their own behavior concerning the goals they have pre planned and self-reflect on their rising efficiency. Such a practice boosts their self-satisfaction and incentive to proceed to ameliorate learning methods. Self-regulated learners are not only more contingent to triumph on academic side but to see their futures optimistically since they enjoy higher motivation and possess adaptive learning methods. It is also a crucial concept due to the fact that the prominent role of education is to bring about lifelong learning skills [1].

Self-regulation is not only helpful for learners but for teachers. In view of the fact that teaching requires problem-solving and invention, grasping the concept of self-regulation is important for teachers. Teachers constantly face complex challenges. Realizing the concept of self-regulated learning improves a teacher's capability to be reflective due to the fact that self-regulated learning yields further insights into the issues of teaching and learning, especially those that emerge when teachers encounter the problems of linking their teaching and the learners' learning to the real world. What are crucial for teachers interested in making schooling more pertinent to the outside world are creating helpful strategies, getting to know more about their own thinking and preserving their own motivation [4].

Delfino, Dettori and Persico [5] contend that learning to be self-regulated is essential for teachers to cope with the ups and downs of the teaching profession, which necessitates teachers to consider different factors. Indeed, for teachers, learning to be self-regulated is critical from both individual and social points of view. From the personal and individual standpoint, teachers should possess self-regulation to realize themselves as teachers and sustain their stimulus [6]. At work, they should deal with various numbers of learners, follow diverse tasks, purposes and aims and apply different instruments, methods and notions. In this varying and multifaceted situation, they need to keep up their incentive, commitment, goals, contentment and efficiency [5]. On the social side, self-regulation is necessary for teachers to realize their students' requirements, to preserve their knowledge and learning and relational development, to motivate their manner of thinking and creativity and to strike a balance between scheduled time and moment to moment independent regulation [4, 7, 5]. Additionally, teachers require developing adaptability and invention to deal with the different situations they encounter in the classroom and to adapt to curricular revisions mandated by the increasing speed of technological and cultural change [5].

Metacognitive reflection and self-regulation, therefore, are imperative skills to lead to teachers' understanding of their competence [6]. As De la Fuente and Justicia [8] asserted, "a teacher who plans and reflects on the design is methodical, systematic and strategic in teaching; such a teacher will most likely produce a self-regulated learning process, although mediated by the student's own learning process and vice versa" (p. 543). Additionally, it seems that teachers acquired self-regulatory skills are better able and prepared to teach these skills to their students.

Although self-regulatory skills are as important for teachers as for learners, reviewing the literature on self-regulation in educational contexts divulges that, as Capa-Aydin, Sungur and Uzuntiryaki [9] also stated, a vast majority of studies in this scope focused on the learning area and students' self-regulation [10, 11, 12, 13, 14, 15, 16, 1] or teachers' self-regulation as learners [e.g., 17, 18, 19] and teachers' own self-regulation strategies as practiced in their educational settings did not received enough attention. The lack of adequate empirical research in this realm provided a sufficient reason for Capa-Aydin *et al.* [9] to develop and validate an instrument assessing teacher self-regulation to be applied at the service of education and research purposes. However, their questionnaire was designed and validated

in Turkish language. In order to extend the use of this valuable instrument in a broader geographical area for both education and research aims, the present researchers validated its English version since English is an international language and is widely used across the world.

MATERIALS AND METHODS

Participants: A total number of 897 EFL teachers who were teaching English in different language institutes participated in the study. Due to missing data in some questionnaires, 190 subjects were excluded from the study. Consequently, the number of participants was reduced to 707 EFL teachers. The profile of the teachers goes as follows: they were between 19 and 63 years old ($M = 29.28$, $SD = 6.47$) (12 teachers did not specify their age) with .42 to 24 years of teaching experience ($M = 5.35$, $SD = 4.86$) (41 of them did not specify their teaching experience). The teachers' age and teaching experience means show that the participants were young and not that much experienced. This issue did not cause a problem for the study because it was the characteristic of the population from which they were extracted. In the context where the study was carried out, working as a teacher in language institutes is not well guaranteed in terms of retirement and insurance issues; thus, young teachers are more willing to work in such environments to gain the necessary experience. Out of 707 teachers, 503 were females and 204 were males. Five hundred and thirteen (513) teachers majored in different subfields of English including teaching ($N = 311$), literature ($N = 196$) and translation ($N = 106$) and 83 had certificate in majors other than English; however, they were duly qualified to teach it (11 did not specify their majors). Participants' level of education varied from Diploma to Ph.D. (Diploma, 30; A.A., 2; B.A./B.S., 429; M.A./M.S., 220; Ph.D., 24) (2 did not specify their level of education).

Research Instrument: Teacher Self-Regulation Scale (TSRS), devised by Capa-Aydin *et al.* [9], was the instrument used in the study. This research instrument was designed based on Zimmerman's self-regulation model and semi-structured interviews with pre-service/in-service teachers. The questionnaire consists of 40 items and a filler ("a question that, although not part of the research question, aids the flow of the questionnaire" [20, p. 247]) which is not used in analyses. The participants answer the items on a six-point Likert scale,

ranging from strongly disagree to strongly agree. The result of factor analysis revealed that the instrument measures nine factor as follows [9, p. 349]:

Goal Setting (GS): The process of establishing objectives to guide actions during instruction.

Intrinsic Interest (II): Beliefs concerning personal interest in the profession.

Performance Goal Orientation (PGO): Goals to do better than others as a teacher and to have others believe in one's competence.

Mastery Goal Orientation (MGO): Goals to improve competence in teaching and master the teaching task against self-set standards.

Self-Instruction (SI): The process of monitoring one's own performance in teaching and making instructional changes when necessary.

Emotional Control (EC): Strategies for controlling and regulating affect, mood and emotions.

Self-Evaluation (SE): The process of evaluating current teaching performance by comparing it with previously established goals and past performance.

Self-Reaction (SR): Affective responses following a teaching performance.

Help-Seeking (HS): Getting help from others to resolve problems encountered in teaching process.

The internal consistency of each subscales of the TSRS, calculated via Cronbach's alpha, was found to be as follows (Table 1):

Data Collection: The study was carried out in different language institutes in nine provinces of Iran (East Azarbayegan, Ilam, Isfahan, Kerman, Khorasan-e-Razavi, Mazandaran, Semnan, Tehran and West Azabayejan) between April 2011 and February 2012. The participants were required to take the TSRS. The majority of the teachers took the questionnaires home, filled them in and during the following weeks submitted them to the researchers or their friends who were in charge of data collection in the different provinces. A small portion of teachers also filled the questionnaires out at work and

Table 1: The reliability of the underlying factors of the TSRS (Turkish version)

Factors	GS	II	PGO	MGO	SI	EC	SE	SR	HS
Number of items	6	5	5	4	4	5	4	4	3
Alpha	.86	.85	.78	.67	.78	.73	.62	.66	.78

immediately delivered them to the researchers. The questionnaire took nearly 20 minutes to complete. To receive reliable data, the purpose of completing the questionnaires was explained to the participants and they were assured that endeavour would be made to observe the confidentiality and anonymity considerations. In terms of ethical procedures, passive consent - involving “not opting out or not objecting to the study” [21, p. 70] - was considered. Despite the researchers’ emphasis to fill out the questionnaires completely, some participants did not fill them out fully and the result was the existence of some missing data. The obtained missing data was something out of the researchers’ control since the process of completing the scale was not compulsory. To acquire robust results, the questionnaires with missing data were excluded from the study. Accordingly, the number of questionnaires was reduced to 707. The reason why only EFL teachers were selected as the participants of the study was the fact that English was not the native language of the context where the study was conducted; to avoid the problems concerning the lack of adequate knowledge regarding the language of the questionnaire, EFL teachers were chosen who were competent in comprehending the language of the questionnaire.

Data Analysis: To investigate the construct validity and reliability of the English version of the TSRS, exploratory and confirmatory factor analyses and reliability analyses were run. To this aim, Factor v 8.02 [22], EQS 6.1 softwares [23] and SPSS v 18 were applied and the level of significance was set at .01.

Before conducting exploratory factor analysis (EFA), to evaluate the adequacy and appropriateness of the data, Kaiser-Meyer Olkin (KMO) measure and Bartlett’s test of sphericity were employed. EFA was conducted, using a Maximum likelihood (ML) extraction method with an oblique rotation. The number of factors was determined based on Kaiser’s criterion, i.e., eigenvalues above 1 were considered [24]; the scree plot was also examined as a complementary method. The factor loading cut off point was set at .30 [25]; accordingly, the items that had factor loadings above .30 with their relevant factor were kept and the items with low factor loadings or those with high factor loadings on a factor different from their original factor were eliminated.

To substantiate the obtained factor structure, a confirmatory factor analysis (CFA) was applied. To this end, structural equation modeling with ML estimation was utilized to determine the following fit indices: The ratio of chi-square to degrees of freedom (χ^2/df), Tucker-Lewis Index (TLI; [26]), Comparative Fit Index (CFI; [27]), Normed Fit Index (NFI; [28]), Incremental Fit Index (IFI; [26]), Goodness-of-Fit Index (GFI; [26]), Adjusted Goodness of Fit Index (AGFI; [29]), the Root Mean Square Error of Approximation (RMSEA; [30]) and Standardized Root Mean Square Residual (SRMR; [26]). For χ^2/df , a value < 3 is acceptable. For TLI, CFI, NFI, IFI, GFI and AGFI values, usually $\geq .90$ is suggestive of a good model fit [31]; for RMSEA, the range of $\leq .05$ to $.08$ reflects a reasonable model fit [32] and for SRMR, a value $\leq .06$ is recommended.

To examine the reliability of the questionnaire, the internal consistency of the whole scale as well as the internal consistency of the subscales was assessed via Cronbach’s alpha coefficients. Additionally, the inter-correlations among the nine subscales were calculated via the Pearson correlation coefficients.

RESULTS

Content Validity: The content validity of the TSRS was assessed using expert judgments. Capa-Aydin *et al.* [9] kindly gave the translated version of the questionnaire (the English one) to the researchers of the current study and they recommended that only the content of the questionnaire be evaluated. The content of the translated version of the questionnaire was assessed by three judges who were expert in the fields of cognitive psychology, psychometrics and applied linguistics. The criteria for measuring content validity were relevance, clarity, simplicity, ambiguity and culture fit [33]. According to the experts’ evaluations, no major problem was found in the translated version.

Construct Validity

EFA: In this part, the data was analyzed through Factor v 8.02 software. After screening the data for the outliers, Kaiser-Meyer Olkin (KMO) measure and Bartlett’s test of sphericity were applied to assess the adequacy and appropriateness of the sample for the analysis. The results of KMO measure (KMO= .916) and Bartlett’s test of sphericity ($\chi^2(780) = 8889.438$, $p < .01$) verified the adequacy and appropriateness of the sample for the analysis. EFA was run to test the factorial validity of the TSRS. ML extraction method, under multivariate normality assumption, was selected over other extraction

procedures since “it allows for the computation of a wide range of the goodness of fit of the model. It also permits statistical significance testing of factor loadings and correlations among factors and the computation of confidence intervals for these parameters” [34, 35, p. 277]. This method led to the extraction of nine factors with the eigenvalues greater than 1.

The next step was the selection of an appropriate rotation method “to attain more interpretable factors” [36, p. 693]. Direct oblique rotation was performed since there were positive correlation coefficients among factors; when in an instrument the subscales are positively correlated, it is recommended that oblique rotation method be used [36].

The eigenvalues and the percentage of the explained variance for each factor are shown in Table 2. According to the Table, nine factors were extracted with the eigenvalues greater than 1 as hypothesized by the TSRS. The first factor possessed the highest eigenvalue and explained variance among factors. Its eigenvalue was 10.715 and it accounted for 24.28% of the variance. In total, the nine factors accounted for 63.23% of the variance.

Table 3 shows the rotated factor matrix for the 40 items in the questionnaire. As the Table illustrates, all items were loaded on their respective subscales except for three, i.e., items 44, 3 and 15 which were cross-loaded on two factors. Item 44 was cross-loaded on factors 4 and 5 and the loading of this item on factor 5 (.664) was greater than that on factor 4 (.412) while in the original version it belonged to factor 4. Thus, this item was omitted. Item 3 was cross-loaded on factors 4 and 5; however, the loading of this item on its respective subscale (.711), i.e., factor 5, was greater than that on factor 4 (.374). Therefore, item 3 was retained in factor 5. Finally, item 15 was cross-loaded on factor 7 and factor 8 with the factor loadings of .321 and .614, respectively. The same as item 44, this item had a high factor loading on a factor different from the one in the original scale; therefore, this variable was also excluded.

Accordingly, the nine factors and their relevant items in the English version were arranged as Table 4 displays:

The English version of the TSRS with nine factors and 38 items was prepared for CFA.

CFA: CFA was conducted on the obtained 38 item scale to verify whether the assumed factor structure offered a good fit to the data [36]. In doing so, structural equation modeling with ML estimation via EQS 6.1 software was applied to estimate different fit indices including χ^2/df , TLI, CFI, NFI, IFI, GFI, AGFI, RMSEA and SRMR and the

Table 2: Eigenvalues and the total variance explained

Factor	Rotation Sums of Squared Loading		
	Eigenvalue	% of Variance	Cumulative %
1	10.715	24.289	24.289
2	3.744	9.860	34.149
3	2.953	7.882	42.031
4	1.617	5.042	47.073
5	1.370	4.425	51.497
6	1.163	3.908	55.405
7	1.076	2.690	58.096
8	1.052	2.630	60.726
9	1.004	2.511	63.237

Table 3: Factor loadings of items with ML and Direct Oblique Rotation

	Factors									Sub-scales
	1	2	3	4	5	6	7	8	9	
Item2	.416									GS
Item8	.393									GS
Item14	.675									GS
Item24	.729									GS
Item28	.504									GS
Item30	.417									GS
Item45	.519									II
Item46	.605									II
Item47	.747									II
Item48	.393									II
Item49	.656									II
Item36		.557								PGO
Item39		.703								PGO
Item40		.641								PGO
Item41		.708								PGO
Item43		.701								PGO
Item37			.790							MGO
Item38			.716							MGO
Item42			.536							MGO
Item44			.412	.664						MGO
Item3			.374	.711						SI
Item11				.778						SI
Item18				.541						SI
Item25				.631						SI
Item7					.645					EC
Item9					.766					EC
Item16					.501					EC
Item33					.643					EC
Item35					.476					EC
Item15						.321	.614			SE
Item19						.584				SE
Item29						.744				SE
Item34						.403				SE
Item4							.623			SR
Item6							.545			SR
Item12							.767			SR
Item22							.628			SR
Item17								.422		HS
Item21								.602		HS
Item27								.696		HS

Extraction method: Maximum likelihood

Rotation method: Direct oblique

Table 4: The factors and their respective items in the English version of the TSRS

	GS	II	PGO	MGO	SI	EC	SE	SR	HS
Items	2, 8, 14, 24, 28, 30	45, 46, 47, 48, 49	36, 40, 36, 41, 43	37, 38, 42	3, 11, 18, 25	7, 9, 16, 33, 35	19, 29, 34	4, 6, 12, 22	17, 21, 27

Table 5: Confirmatory factor analysis for the English version of the TSRS

Fit Indices -	χ^2/df	TLI	CFI	NFI	IFI	GFI	AGFI	RMSEA	SRMR	p
Levels of acceptable fit	< 3	>.90	>.90	>.90	>.90	>.90	>.90	<.80	< .06	
Capa-Aydin <i>et al.</i>	2764.3			.98		.98		.06		< .05
The current study	1.67	.98	.99	1.00	.99	1.00	.99	.03	.026	< .01

Table 6: Alphas and inter-correlations of the subscales

Factors	M(SD)	1	2	3	4	5	6	7	8	9
1. GS	29.3(4.8)									
2. II	25.7(3.9)	.55**								
3. PGO	22.6(5.6)	.42**	.38**							
4. MGO	19.4(3.3)	.56**	.61**	.35**						
5. SI	20.4(2.7)	.64**	.55**	.25**	.51**					
6. EC	22.4(3.2)	.41**	.44**	.33**	.36**	.48**				
7. SE	29.7(3.1)	.63**	.18**	.21**	.55**	.67**	.39**			
8. SR	20.0(3.1)	.47**	.44**	.32**	.37**	.46**	.23**	.50**		
9. HS	31.4(2.4)	.39**	.28**	.23**	.25**	.31**	.36**	.38**	.40**	
Alpha		.72	.70	.67	.75	.70	.76	.72	.60	.61

Note: ** P<.01

results were as follows: $\chi^2/df = 1.67$, TLI= .98, CFI = .99, NFI = 1.00, IFI = .99, GFI = 1.00, AGFI = .99, RMSEA = .03 and SRMR=.026. The quantities of all indices were appropriate and at the acceptable ranges; therefore, it was concluded that the construct validity of the English version of the TSRS with 38 items was supported. The findings of CFA are depicted in Table 5 and Figure 1.

Reliability Analysis: In order to assess the reliability of the questionnaire as well as the inter-correlations among the different subscales, SPSS v 18 was employed. The reliability of the whole scale, estimated via Cronbach’s alpha, turned out to be .89 which was a high and satisfactory magnitude [37]. The internal consistency of the factors, calculated via Cronbach’s alpha, ranged from .60 to .76; the obtained quantities were within an acceptable range [37].

To determine the inter-correlations among factors, Pearson correlation coefficients were estimated. The results revealed that there were positive significant correlations among factors and the magnitudes of these correlations varied from .18 to .67. Table 6 illustrates the results of the internal consistency coefficients of the nine factors and the inter-correlations among the factors.

DISCUSSION

This study aimed to investigate the reliability and validity of the English version of the TSRS. The original

version of the questionnaire was designed and developed in Turkish language by Capa-Aydin *et al.* [9]. In its original version, the scale includes 40 items and one filler. The items were loaded on nine factors, namely, goal setting, intrinsic interest, performance goal orientation, mastery goal orientation, self-instruction, emotional control, self-evaluation, self-reaction and help-seeking.

In this study, the content and construct validities and the reliability of the English version of the questionnaire were examined. The content validity was evaluated via experts’ judgments based on the criteria of relevance, clarity, simplicity, ambiguity and culture fit. The construct validity of the scale was assessed through EFA and CFA.

The results of EFA showed that all items were loaded on their respective subscales except for three (items 44, 3 & 15) which were cross-loaded, i.e., they were loaded on two factors. Among them, two (items 44 & 15) had high loadings with a factor different from their original factor; therefore, they were discarded. One (item 3) had a high loading on its relevant factor and a lower loading on a factor different from the original one. This item was retained in its original factor. Accordingly, the number of items in the English version of the TSRS was reduced to 38 (38 items and one filler).

The thirty-eight item TSRS was subjected to CFA to check the overall fitness of the acquired model to the data. To achieve this goal, different fit indices including χ^2/df , TLI, CFI, NFI, IFI, GFI, AGFI, RMSEA and SRMR were assessed. The results of fit goodness indices verified the

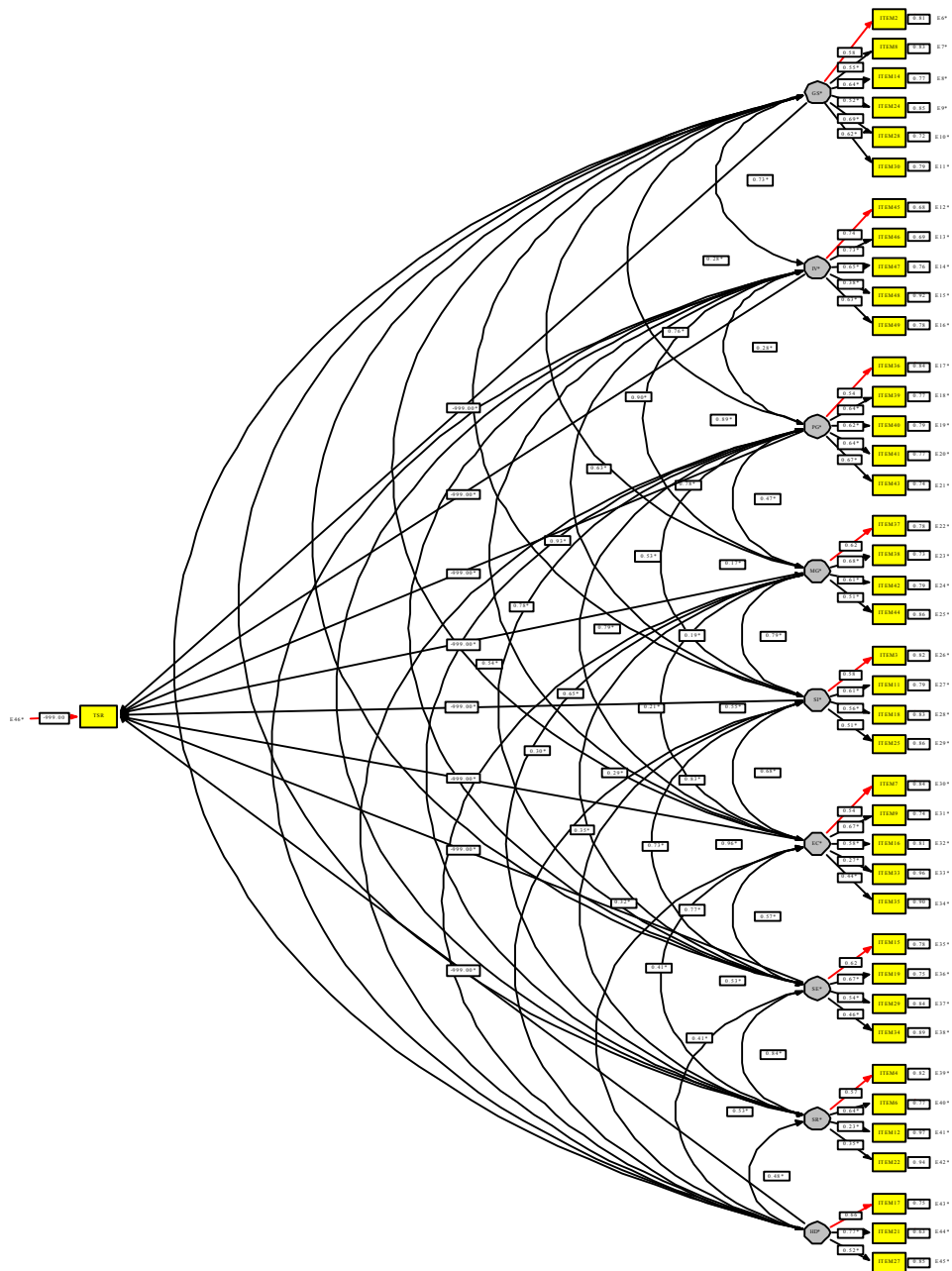


Fig. 1: Factor loadings for the English version of the TSRS

acquired nine correlated subscale model as the best solution for explaining the underlying structure of the TSRS.

The reliability analysis via Cronbach's alpha revealed that the overall internal consistency of the questionnaire was high and satisfactory. The internal consistency values of the subscales were also within an acceptable range. Additionally, the results of inter-correlation analyses divulged that there were positive significant correlations among the nine subscales.

In essence, based on the findings of this research, the English version of the TSRS is a valid and reliable instrument that can be applied at the service of research and educational purposes, especially in the area of teacher education. It's an invaluable device for both preservice and inservice teachers. For preservice teachers, it makes them aware of the strategies to augment their self-regulatory skills in their profession in future. For inservice teachers, despite informing them of teacher self-regulatory strategies, it provides them with an

appropriate tool to assess their own self-regulatory practices. Via growing cognizant of their strengths and weaknesses in this area, they modify their professional behaviors so that they can exploit self-regulation in the direction of their effectiveness. It is also of great help for researchers to explore the association between teacher self-regulation and other related variables, that is, the existence of this instrument has the potential to open a new chapter of research in teacher education since, as far as the current researchers searched, there is no other teacher self-regulation instrument.

Nevertheless, some limitations of the study should be taken into account. It's worthy of note that, in the current research, the data was only collected from English teachers. In a future study, the instrument can be validated with teachers teaching diverse subject matters. Additionally, since the English version of the questionnaire was validated in an EFL context, it is recommended that a similar study be conducted in native English speaking settings to compare the results and to see whether the similar findings will be obtained.

REFERENCES

1. Zimmerman, B.J., 2002. Becoming A Self-Regulated Learner: An Overview. *Theory into Practice*, 41(2): 64-70.
2. Baumeister, R.F., B.J. Schmeichel and K.D. Vohs, 2007. Self-Regulation and the Executive Function: The Self as Controlling Agent. In: A.W. Kruglanski and E.T. Higgins, (Eds.), *Social Psychology: Handbook of Basic Principles*. Guilford Press, New York, pp: 516-539.
3. Zimmerman, B.J., 1998. Academic Studying and the Development of Personal Skill: A Self-Regulatory Perspective. *Educational Psychologist*, 33(2/3): 73-86.
4. Paris, S.G. and P. Winograd, 2001. The Role of Self-Regulated Learning in Contextual Teaching: Principles and Practices for Teacher Preparation, Retrieved February 2012, from <http://www.ciera.org/library/archive/2001-04/0104prwn.pdf>.
5. Delfino, M., G. Dettori and D. Persico, 2010. An Online Course Fostering Self-Regulation of Trainee Teachers. *Psicothema*, 22(2): 299-305.
6. Cardelle-Elawar, M., L. Irwin and M.L. Sanz de Acedo Lizarraga, 2007. A Cross Cultural Analysis of Motivational Factors that Influence Teacher Identity. *Electronic Journal of Research in Educational Psychology*, 5(3): 565-592.
7. Bolhuis, S. and M.J.M. Voeten, 2001. Toward Self-Directed Learning in Secondary Schools: What Do Teachers Do? *Teaching and Teacher Education*, 17: 837-855.
8. De La Fuente, J. and F. Justicia, 2007. The DEDEPRO™ Model of Regulated Teaching and Learning: Recent Advances. *Electronic Journal of Research in Educational Psychology*, 5(3): 535-564.
9. Capa-Aydin, Y., S. Sungur and E. Uzuntiryaki, 2009. Teacher Self-Regulation: Examining a Multidimensional Construct. *Educational Psychology*, 29(3): 345-356.
10. Cleary, T.J. and B.J. Zimmerman, 2004. Self-Regulation Empowerment Program: A School-Based Program to Enhance Self-Regulated and Self-Motivated Cycles of Student Learning. *Psychology in the Schools*, 41(5): 537-550.
11. Dembo, M.H. and M.J. Eaton, 2000. Self-Regulation of Academic Learning in Middle-Level Schools. *The Elementary School Journal*, 100(5): 473-490.
12. Hammann, L., 2005. Self-Regulation in Academic Writing Tasks. *International Journal of Teaching and Learning in Higher Education*, 17(1): 15-26.
13. Lakes, K.D. and W.T. Hoyt, 2004. Promoting Self-Regulation through School-Based Martial Arts Training. *Applied Developmental Psychology*, 25: 283-302.
14. Nicol, D.J. and D. Macfarlane-Dick, 2006. Formative Assessment and Self-Regulated Learning: A Model and Seven Principles of Good Feedback Practice. *Studies in Higher Education*, 31(2): 199-218.
15. Wolters, C.A. and P.R. Pintrich, 1998. Contextual Differences in Student Motivation and Self-Regulated Learning in Mathematics, English and Social Studies Classrooms. *Instructional Science*, 26: 27-47.
16. Zimmerman, B.J., 1990. Self-Regulated Learning and Academic Achievement: An Overview. *Educational Psychologist*, 25(1): 3-17.
17. Bembenuddy, H., 2007. Preservice Teachers' Motivational Beliefs and Self-Regulation of Learning. A Paper Presented at the Annual Meeting of the American Educational Research Association, Chicago, IL, CA.
18. Corrigan, G. and N. Taylor, 2004. An Exploratory Study of the Effect a Self-Regulated Learning Environment Has on Pre-Service Primary Teachers' Perceptions of Teaching Science and Technology. *International Journal of Science and Mathematics Education*, 2: 45-62.

19. Dembo, M.H., 2001. Learning to Teach Is Not Enough - Future Teachers Also Need to Learn How to Learn. *Teacher Education Quarterly*, 28: 23-35.
20. Williams, A., 2003. How to Write and Analyze A Questionnaire. *Journal of Orthodontics*, 30: 245-252.
21. Dornyei, Z., 2007. *Research Methods in Applied Linguistics*. Oxford University Press, Oxford.
22. Lorenzo-Seva, U. and P.J. Ferrando, 2011. *Factor 8.02* [Computer software]. Universitat Rovira i Virgili, Tarragona, Spain.
23. Bentler, P.M., 2004. *EQS: Structural Equations Program Manual*. Encino, CA: Multivariate Software.
24. Costello, A.B. and J.W. Osborne, 2005. Best Practices in Exploratory Factor Analysis: Four Recommendations for Getting the Most from Your Analysis. *Practical Assessment, Research and Evaluation*, 10(7): 1-9.
25. Bailey, A., G. Johnson and K. Daniels, 2000. Validation of a Multi-Dimensional Measure of Strategy Development Processes. *British Journal of Management*, 11: 151-162.
26. Widaman, K.F. and J.S. Thompson, 2003. On Specifying the Null Model for Incremental Fit Indices in Structural Equation Modeling. *Psychological Methods*, 8(1): 16-37.
27. Bentler, P.M., 1990. Comparative Fit Indices in Structural Models. *Psychological Bulletin*, 107: 238-246.
28. Bentler, P.M. and D.C. Bonnet, 1980. Significance Tests and Goodness of Fit in the Analysis of Covariance Structures. *Psychological Bulletin*, 88(3): 588-606.
29. Jöreskog, K. and D. Sörbom, 1993. *LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language*. Scientific Software International Inc, Chicago, IL.
30. Steiger, J.H. and J.C. Lind, 1980. Statistically-Based Tests for the Number of Factors. Paper Presented at the Annual Spring Meeting of the Psychometric Society, Iowa City, Iowa.
31. Bentler, P., 1992. On the Fit of Models to Covariances. *Psychological Bulletin*, 88: 588-606.
32. Browne, M.W. and R. Cudeck, 1993. Alternative Ways of Assessing Model Fit. In: K.A. Bollen and J.S. Long (Eds.), *Testing Structural Equation Models*. Sage, Newbury Park, CA, pp: 136-162.
33. Yaghmaie, F., 2003. Content Validity and its Estimation. *Journal of Medical Education*, 3(1): 25-27.
34. Cudeck, R. and L.L. O'Dell, 1994. Applications of Standard Error Estimates in Unrestricted Factor Analysis: Significance Tests for Factor Loadings and Correlations. *Psychological Bulletin*, 115: 475-487.
35. Fabrigar, L.R., D.T. Wegener, R.M. McCallum and E.J. Strahan, 1999. Evaluating the Use of Exploratory Factor Analysis in Psychological Research. *Psychological Methods*, 4(3): 272-299.
36. Kahn, J.H., 2006. *Factor Analysis in Counseling Psychology Research, Training and Practice: Principles, Advances and Applications*. The Counseling Psychologist, 34: 684-718.
37. Litwin M.S., 1995. *How to measure survey reliability and validity*. SAGE Publication, California.