DEVELOPMENT OF FLOW STATE SCALE IN ENGLISH AS A FOREIGN LANGUAGE CONTEXT

Ali Eryilmaz[1],
Onur Ergünay[2i]
[1]Assoc. Prof. Dr,
Yildiz Technical University,
Faculty of Education,
Psychological Counseling and Guidance,
Istanbul, Turkey
[2]Dr., Eskisehir Osmangazi University,
Department of Foreign Languages,
Eskisehir, Turkey

Abstract:
The flow theory with its components 'anxiety', 'boredom', 'skills' and 'challenges' can be associated with foreign language learning contexts. Although there are some attempts in several studies to examine the link between EFL context and the flow theory, no scale to measure the flow state in EFL context has been found in the related literature. The study presents the development and validation of the Flow State Scale in English as a Foreign Language Context (FSSEFL). A cross-sectional research design was used in the study. The scale was administered to a total of 438 students at Department of Foreign Languages at a state university in Turkey. Both exploratory and confirmatory factor analyses were conducted to the data collected from two separate participant groups in the study. The findings suggest that FSSEFL provides a valid and reliable instrument for the flow state in EFL context. The scale has three-factor structure with 10 items. The explained variance of the scale is 71.80% and alpha values are ranged from 0.78 to 0.82.

Keywords: flow theory, English as a foreign language, scale development, boredom, anxiety, the flow state scale in English as a foreign language context.

1. Introduction

Many factors take part in the context of teaching English as a foreign language. The context is perceived as involving a variety of internal factors in addition to cognitive skills (Horwitz, 1995). The vitality of individuals' affective features is also highlighted

---

[1] Correspondence: email erali76@hotmail.com, oergunay@gmail.com

in addition to the differences in their cognitive abilities (Brown, 2000; Arnold & Brown, 1999). In particular, Horwitz (1995) argues that foreign language learners exert more individual effort than in other learning contexts as they are interacting with an unfamiliar culture at the same time. Thus, the affective factors such as attitude, motivation, and anxiety seem to take crucial part in foreign language learning. 'Flow state', as a closely related concept with anxiety and motivation, seems to be among these factors. The flow is associated with motivation, anxiety, boredom, challenges and skills by positive psychologist Csikszentmihalyi (2014) and the flow theory is developed for the probable use in various fields of study. On the one hand, if the level of the challenges that the individuals face are higher than their levels of skills, the state of anxiety occurs. Similarly, if the level of those challenges is lower than their levels of skills, it is probable that the state of boredom appears (Csikszentmihalyi, 2014). On the other hand, the flow theory suggests that a delicate balance between the skills and the challenges of individuals contributes to optimal performance and learning in any context (Csikszentmihalyi, 1975, 1990; Csikszentmihalyi & LeFevere, 1989; Csikszentmihalyi & Rathunde, 1993). Due to the balance between the skills and challenges, the individuals feel engaged in the tasks they are doing and feel the flow experience (Csikszentmihalyi, 2014).

The factors 'anxiety', 'motivation', 'engagement' are also highlighted in foreign language learning environments. Therefore, the flow theory might be associated with those environments, too. As a matter of fact, Egbert (2003) and Cox (2014) point out that the flow state and foreign language learning process involves similar components, which promotes the idea that flow state is essential in foreign language learning contexts and might have a positive effect upon foreign language learning. To that end, several studies on the flow state in the field of teaching English as a foreign language have been carried out recently. For example, Guan (2013) investigates the flow state in foreign language translation teaching context in China and concludes the positive effect of considering flow state in syllabus design and planning translation tasks. Another result in Guan's (2013) study is that the emerged flow state, which leads to experience of joy and satisfaction in learning, strengthens the learning motive of the learners and willingness to challenge more difficult tasks. Kirchhoff (2013) also examines both if English as a second language (ESL) learners experience flow and if there is a relation between hours of extensive reading in ESL and the frequency of flow. The results reveal that there is no relationship between the frequency of students' flow experiences while reading and the hours of their extensive reading. Nevertheless, the study contributes the possible relationship between language learning and extensive reading approach by aligning the features of flow state and extensive reading approach in an ESL context.

Apparently, the flow theory might be associated with foreign language learning considering the components of flow (Csikszentmihalyi, 1975, 1990; Csikszentmihalyi & LeFevere, 1989; Csikszentmihalyi & Rathunde, 1993) and the relevant literature (Ak Şentürk, 2010; Guan, 2013; Kirchhoff, 2013; Tardy & Snyder, 2004). Accordingly, the teaching tasks carried out in classrooms by teachers comprise the component of 'challenges'. If the skill levels of students are lower than the task outcomes, this may

cause students' anxiety. Contrarily, if the skill levels of students are higher than the task outcomes, this may lead to students' boredom. Therefore, the task outcomes and the skill levels of students must correspond to each other (Figure 1).
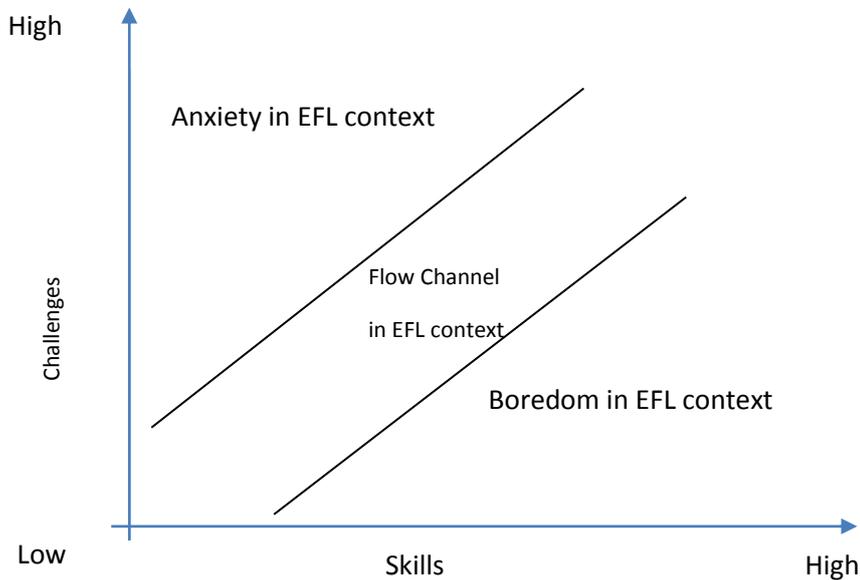

Figure 1: Adaptation of Flow Theory to EFL Context

English language is taught as a foreign language from the primary schools to universities in Turkey. Nevertheless, the targeted success has not been achieved and there appear a lot of problems in teaching English as a foreign language (EFL) at all levels (Işık, 2008; Kırkgöz, 2005, 2007; Kızıldağ, 2009; Oktay, 2014; Solak & Bayar 2015). Some studies reveals that deficiencies in teacher education and technology use (Gedikoğlu, 2005), differences between educational policies and practices, and crowded classrooms (Kırkgöz, 2009) are among these problems. In addition, some studies highlight the problems with regard to some affective features such as foreign language learning anxiety and motivation (Demirtaş & Bozdoğan, 2013; Elaldı, 2016, Doğan & Tuncer, 2016; Tüm & Kunt, 2013). All state universities also offer courses of English in Turkey. Moreover, English is used as teaching medium at some undergraduate levels. Therefore, these universities offer English language preparatory curricula for the students who do not have enough English language proficiency. These students have to pursue and accomplish the English language preparatory curricula provided in order to start their department. As a matter of course, it is probable that the affective factors such as anxiety and motivation also take part in these learners' achievement.

The concern of affective features such as anxiety and motivation is also highlighted by various scholars in the wider context (Davies & Pearse, 2000; Dörnyei, 1998; Gardner, 2007; Horwitz, 2001; Schmidt, Boraie & Kassabgy, 1996). All in all, the flow theory might be associated with the foreign language learning and more specifically with EFL contexts concerning the affective factors mentioned above. The flow theory involving anxiety, motivation, skills and challenges might as well be deemed worthy and used in contributing to learners' achievement (Beard, 2015;

Seligman & Csikszentmihalyi, 2000; Shernoff, Csikszentmihalyi, Shneider & Shernoff, 2003). In addition, Csikszentmihalyi (1991, 2014), who developed the theory, suggests that it may be effective in ensuring learners' engagement through building enthusiasm and joy together. Moreover, the flow state can have positive effects on individuals' happiness and thus increase their creativity (Csikszentmihalyi, 1975, 1990; Csikszentmihalyi & LeFevere, 1989; Csikszentmihalyi & Rathunde, 1993). Therefore, planning and implementing syllabi and activities in EFL contexts in a way that will increase flow experience of students may contribute to their happiness and creativity.

In summary, flow theory involves components which also have key roles in teaching EFL contexts. Consequently, there appears a need for an instrument that can measure the flow state in EFL contexts. In fact, there are some instruments to measure overall flow state (İşigüzel & Çam, 2014; Jackson & Marsh, 1996; Magyarodi, Nagy, Soltesz, Mozes & Olah, 2013). In addition, two field-specific scales, in particular 'Flow State Scale in Maths Lesson' and 'Flow State Scale in Turkish Literature and Language Lesson' are developed by Eryılmaz & Mammadov, 2016a, 2016b). However, it appears that no scale for measuring the flow state of EFL students has been developed so far, and developing a valid scale for EFL context can contribute to the relevant concerns in the area, in that it might raise awareness of flow theory among scholars and practitioners in the field of EFL. Therefore, the present study aims at developing a valid flow state scale for EFL.

2. Method

A cross-sectional research design was used in the study. Exploratory factor analysis, confirmatory factor analysis, internal consistency reliability, and some validity analysis techniques are applied for developing the scale.

2.1 Participants
The participants were 438 undergraduate students who pursue an English language preparatory curriculum at Department of Foreign Languages at a public university in Turkey. They were divided into two groups randomly. The item analysis and exploratory factor analysis were applied to the first group while the second group was used for confirmatory factor analysis, reliability analysis and validation.

Exploratory factor analysis group: A total of 214 participants took place in exploratory factor analysis study. Over two thirds of them were males (n = 145, 67.8%), and the age of these participants ranged from 17 to 27 (M = 18.91; SD = 1.36).

Confirmatory factor analysis group: A total of 224 participants took place in confirmatory factor analysis study. Approximately three quarters of them were males (n = 162, 72.3%), and the age of these participants ranged from 17 to 32 (M = 19.11; SD = 1.93).

2.2 The instrument used for concurrent validity

'Motivation to Study Lesson Scale for Adolescents' was used for examining the concurrent validity of the flow state scale in the study. It is a 13-item scale rated on a 4-point Likert scale and was developed by Eryılmaz & Ercan (2014). It has three distinct factors assessing intrinsic motivation, extrinsic motivation and amotivation. The Cronbach's alpha for three factors ranges from 0.75 to 0.84 and the data for its validity are reported (Eryılmaz & Ercan, 2014).

2.3 Item generation and preliminary form of the scale

The preliminary form of the scale was generated in six steps. To begin, the researchers consulted the literature regarding flow theory, flow in schools and classrooms, and teaching EFL. Second, unstructured interviews were carried out with 60 EFL students in the foreign language department. The views of these students appeared to be highly relevant to the concepts 'flow state', 'boredom' and 'anxiety'. Third, a pool of items was constructed regarding the relevant literature and the students' views, and the initial form of the scale was formed. It consisted of 18 items on the categories 'flow state', 'boredom' and 'anxiety' (six items for each). Fourth, this initial form was reviewed by three experts (one with PhD degree in assessment and evaluation, one with PhD in educational psychology, and one instructor of English teaching in EAP context) in terms of the format of the scale, the clarity of expressions, covering the factors and the use of language. Next, the form was revised by the researchers in accordance with the experts' views. Finally, the 13-item preliminary form of the scale was generated.

3. Results

3.1 Exploratory factor analysis

The preliminary form of the scale was administered to 214 EFL students for exploratory factor analysis (EFA). Prior to EFA, Kaiser-Meyer Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were conducted to identify the appropriateness of the data for factor analysis. KMO value of the scale was 0.78 (p<.01) and the chi square value was 1.126 (p<.01), which verified the appropriateness of the data for factor analysis.

The scree test graphic from the initial component analysis suggested that three components be retained for interpretation (Figure 2). Next, the dimensionality of the 13 items was analysed using principle components factor analysis and orthogonal varimax rotation was used in the exploratory factor analysis. In the extraction phase, the items that have factor patterns below 0.30, the items accounted for more than one factor, and the items of which factor patterns were below 0.10 were extracted, and consequently the analysis was done with total of 12 items (Table 1).
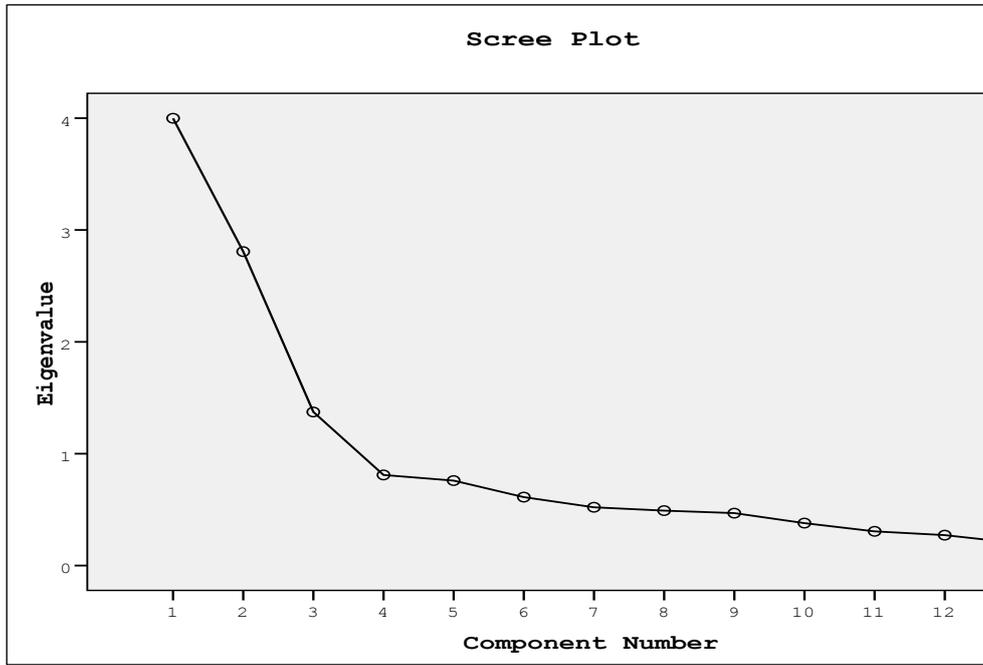
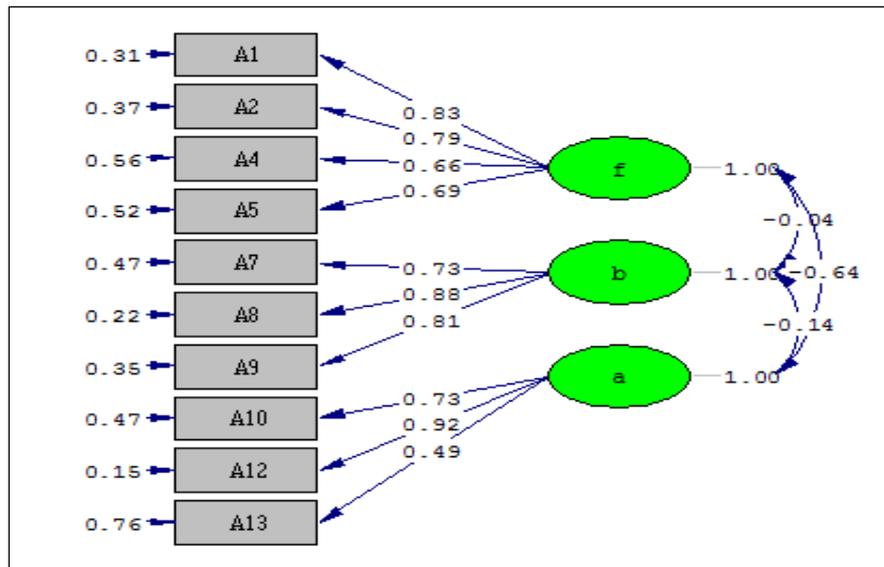**Figure 2:** Scree plot graph of the exploratory factor analysis

Table 1: Factor Pattern and Total Variance Explained

Items	Factors		
	I	II	III
Item 1	0.865		
Item 2	0.790		
Item 3	0.697		
Item 4	0.667		
Item 5	0.606		
Item 6		0.838	
Item 7		0.809	
Item 8		0.765	
Item 9		0.754	
Item 10			0.782
Item 12			0.781
Item 13			0.679
% of Variance	23.5	21.2	18.0
Cumulative %	23.5	44.8	62.9

As can be seen in Table 1, the exploratory factor analysis suggested that the three factors accounted for 62.9% of the total variance. The factor patterns of the items ranged from 0.61 to 0.87.

3.2 Confirmatory Factor Analysis
Confirmatory factor analysis (CFA) was also administered to the scale in the present study to justify the EFA results. First, item 3 and 6 were extracted as their factor patterns were computed below 0.10 so the analysis was done with 10 items. The results of the confirmatory analysis are displayed in Figure 3.

Note 1: f = Flow; b = Boredom, a = Anxiety
Note 2: Chi-Square (χ2)=71.50, degree of freedom (df)=32, RMSEA=0.080

Figure 3: Confirmatory Factor Analysis Results (Diagram of three-factor model)

The results of CFA demonstrated that the scale has the fit indexes of χ2/df=2.33, RMSEA=0.080, AGFI=0.87, GFI=0.92, NFI=0.93, NNFI=0.94, and CFI=0.96. These indices refer to have acceptable compatibility according to Schermelleh-Engel, Moosbrugger & Müller (2003).

The scale which was developed through EFA and CFA is entitled 'Flow State Scale in English as a Foreign Language Context' (FSSEFL). The correlation coefficients between all components of the FSSEFL were computed in the correlation matrix. The correlation coefficients between the factors range from -0.009 to -0.542 (-0.542 between flow and anxiety, -0.036 between flow and boredom, -0.009 between boredom and anxiety)

3.3 Reliability of the FSSEFL

To examine the reliability of the FSSEFL, the Cronbach alpha internal consistency was measured and test-retest reliability method was used. The internal consistency was measured for each factor of the FSSEFL. The Cronbach alpha value for the factor 'flow' was 0.82, for the factor 'boredom' was 0.82, and for the factor 'anxiety' was 0.78.

The test-retest reliability was examined through the data obtained from 50 participants who were asked to complete the FSSEFL three weeks after the data collection for CFA. The correlation coefficients for the factor 'flow' was 0.77, for the factor 'boredom' was 0.49, and for the factor 'anxiety' was 0.61. These results refer to a high reliability value for the FSSEFL.

3.4 Concurrent Validity of the FSSEFL

Motivation to Study Lesson Scale for Adolescents (Eryılmaz & Ercan, 2014) was used to examine the concurrent validity of the FSSEFL. The results of the Pearson product-moment correlation coefficients for each factor are shown in Table 2.

Table 2: The Results of Pearson Correlation Coefficients

	Intrinsic Motivation	Extrinsic Motivation	Amotivation
Flow	,431*	,271*	-,363*
Boredom	-,070	,051	,087
Anxiety	-,321*	-,239*	,290*

As displayed in Table 2, the factors in the FSSEFL correlate with the ones in Motivation to Study Lesson Scale for Adolescents (Eryılmaz & Ercan, 2014). The results indicate that the factor 'flow' state positively correlates with both intrinsic and extrinsic motivation, and negatively correlates with amotivation as expected. Conversely, the factor 'anxiety' significantly correlates with both of the motivation factors in a negative way. These results refer that the FSSEFL has a concurrent validity.

4. Discussion and Conclusion

The flow has been of concern in English language teaching contexts in several studies so far. In one of those studies, Tardy & Snyder (2004) investigates the flow state of foreign language teachers in their teaching practices. The study concludes that the flow states of EFL teachers are associated with five dimensions, specifically interest and involvement, authentic communication, teacher-student dialogue, and moments of learning. In another study, the perceptions of EFL teachers and students on the flow state in speaking lessons are examined (Ak Şentürk, 2010). The study reveals that discussions and group work activities facilitate the flow state of both the teachers and the students. Both studies are based on qualitative data, so the results depend on the opinions of individuals and the scholars' interpretations. That leads us to consider the flow as a concept might be associated with English language teaching but there may be lack of an instrument to measure it properly. Therefore, the present study contributes to the efforts to associate the flow theory to English language teaching contexts.

There are a number of studies on developing instruments for measuring flow state in different contexts. In majority of these studies, the flow state is addressed as an overall concept instead of field-specific contexts (İşigüzel & Çam, 2014; Jackson & Marsh, 1996; Magyarodi, Nagy, Soltesz, Mozes & Olah, 2013). In addition, there are some studies in which field-specific flow scales are developed (Eryılmaz & Mammadov, 2016a, 2016b; Wang, Liu & Khoo, 2009). However, no instrument to measure the flow state in EFL contexts could be found in the related literature, so the FSSEFL may function as an instrument for the scholars to measure the flow state in English language learning contexts.

Prior to the scale development and validation, the flow theory, which is conceptualized by Csikszentmihalyi (1975, 1990), was examined and the scale was thoroughly based on this theoretical framework. The three-structure model in flow theory (Csikszentmihalyi, 1990; Csikszentmihalyi & Rathunde, 1993) is also confirmed with the FSSEFL. This might be explained as a verification of the theoretical structure of the flow theory with the FSSEFL.

The flow state is highlighted as a contributing experience in all learning contexts (Csikszentmihalyi, 1975, 1990; Csikszentmihalyi & LeFevere, 1989). However, it is argued that the studies associated with this theory are not sufficient enough (Shernoff, Csikszentmihalyi, Shneider & Shernoff, 2003; Tardy & Snyder, 2004). It may suggest the flow theory is underestimated. Therefore, it may be necessary to carry out further studies in order to improve the flow experience in various learning contexts. Another recommendation for further research may be the examining the relationship between various variables in foreign language learning contexts and the flow experience. The FSSEFL can be useful for measuring the flow state in those studies.

The present study reports on development and validation of the FSSEFL. The results demonstrate that the FSSEFL with its three factors 'flow', 'boredom' and 'anxiety' is a valid and reliable scale to measure the flow state in EFL contexts. Therefore, the present study that brought out a valid instrument regarding the positive psychology might contribute to the scholars who would like to the measure the flow state in EFL contexts. On the other hand, the items in the FSSEFL are not specified to EFL contexts, which suggests that it might be used in similar contexts such as EAP, ESP or other English language learning contexts.

References

1. Ak Şentürk, B. A. (2010). *Teachers' and students' perceptions of flow in speaking activities*, (Doctoral dissertation, Bilkent University).
2. Arnold, J., & Brown, H. D. (1999). A map of the terrain. In J. Arnold (Ed.), *Affect in language learning* (pp 1-24). Cambridge: Cambridge University Press.
3. Brown, H. D. (2000). *Principles of language learning and teaching*. (4th ed.). New York: Longman.
4. Cox, C.B. (2014). *21st century skills and principles of flow in the foreign language classroom* (M.A. thesis, Brigham Young University).
5. Csikszentmihalyi, M. (2014). *The systems model of creativity: The collected works of Mihaly Csikszentmihalyi*. Netherlands: Springer.
6. Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety*. San Francisco: Jossey.
7. Csikszentmihalyi, M., & LeFevre, J. (1989). Optimal experience in work and leisure. *Journal of Personality and Social Psychology, 56*(5), 815-822.
8. Csikszentmihalyi, M., & Rathunde, K. (1993). The measurement of flow in everyday life: toward a theory of emergent motivation. *Nebraska Symposium on Motivation, 40*, 57–97.
9. Csikszentmihalyi, M. (1991). Thoughts about education. In D. Dickinson (Ed.), *Creating the Future: Perspectives on Educational Change*, (pp 83-86). Aston Clinton: Accelerated Learning Systems.
10. Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper & Row.

11. Davies, P., & Pearse, E. (2000). *Success in English Teaching: A Complete Introduction to Teaching English at Secondary School Level and Above*. Oxford: Oxford University Press.

12. Demirtaş, Ö., & Bozdoğan, D. (2013). Foreign language anxiety and performance of language learners in preparatory classes, *Turkish Journal of Education, 2*(3), 4-13. doi:10.19128/turje.181060

13. Doğan, Y., & Tuncer, M. (2016). Examination of foreign language classroom anxiety and achievement in foreign language in Turkish university students in terms of various variables. *Journal of Education and Training Studies, 4*(5), 18-29. doi:https://doi.org/10.11114/jets.v4i5.1337

14. Dörnyei, Z. (1998). Motivation in second and foreign language learning. *Language teaching, 31*(03), 117-135. doi:https://doi.org/10.1017/S026144480001315X

15. Egbert, J. (2003). A study of flow theory in the foreign language classroom. *The Modern Language Journal, 87*: 499–518. doi:10.1111/1540-4781.00204

16. Elaldı, Ş. (2016). Foreign language anxiety of students studying English Language and Literature: A Sample from Turkey. *Educational Research and Reviews, 11*(6), 219-228. doi:10.5897/ERR2015.2507

17. Eryılmaz, A., & Ercan, L. (2014). Developing a scale for motivation to study lesson for adolescents. *Başkent University Journal of Education, 1*(1), 34-40.

18. Eryılmaz, A., & Mammadov, M. (2016). Development of the flow state scale in mathematic lesson. *Journal of Theory and Practice in Education, 12*(4), 870-890.

19. Eryılmaz, A., & Mammadov, M. (2016). Investigating of psychometric properties of the flow state scale in Turkish literature and language lesson. *Education and Society in the 21st Century, 5*(13), 247-258.

20. Gardner, R.C. (2007). Motivation and second language acquisition. *Porta Lingarium, 8*, 9-20.

21. Gedikoğlu, T. (2005). Turkish education system in the process of European community: Problems and solutions. *Mersin University Journal of the Faculty of Education, 1*(1), 66-80.

22. Guan, X. (2013). A study on flow theory and translation teaching in China's EFL class. *Journal of Language Teaching and Research, 4*(4), 785-790. doi:10.4304/jltr.4.4.785-790

23. Horwitz, E. K. (1995). Student affective reactions and the teaching and learning of foreign languages. *International Journal of Educational Research, 23*(7), 573-579. doi:https://doi.org/10.1016/0883-0355(96)80437-X

24. Horwitz, E. K. (2001). Language anxiety and achievement. *Annual review of applied linguistics, 21*, 112-126. doi:https://doi.org/10.1017/S0267190501000071

25. Işık, A. (2008). Yabancı dil eğitimimizdeki yanlışlar nereden kaynaklanıyor? [What are the sources of mistakes in our foreign language education?]. *Journal of Language and Linguistic Studies, 4*(2), 15-26.

26. İşigüzel, B., & Çam, S. (2014). The adaptation of flow short scale to Turkish: A validity and reliability study. *International Journal of Human Sciences, 11*(2), 788-801. doi:https://doi.org/10.14687/ijhs.v11i2.2826

27. Jackson, A.S., & Marsh W.H. (1996). Development and validation of a scale to measure optimal experience: The flow state scale. *Journal of Sport & Exercise Psychology, 18*, 17-35

28. Kirkgöz, Y. (2009). Globalization and English language policy in Turkey. *Educational Policy*, 23(5), 663-684. doi:https://doi.org/10.1177/0895904808316319

29. Kırkgöz, Y. (2005). Motivation and student perception of studying in an English-medium university. *Journal of Language and Linguistic Studies*, 1(1), 101-123.

30. Kirkgoz, Y. (2007). English language teaching in Turkey: Policy changes and their implementations. *RELC journal*, 38(2), 216-228. doi:https://doi.org/10.1177/0033688207079696

31. Kizildağ, A. (2009). Teaching English in Turkey: Dialogues with teachers about the challenges in public primary schools. *International Electronic Journal of Elementary Education*, 1(3), 188-201.

32. Kirchhoff, C. (2013). L2 extensive reading and flow: Clarifying the relationship. *Reading in a foreign language*, 25(2), 192-212.

33. Magyarodi, T., Nagy, H., Soltesz, P., Mozes, T., & Olah, A. (2013). Psychometric properties of a newly established flow state questionnaire. *The Journal of Happiness & Well-Being*, 1(2), 86-96.

34. Oktay, A. (2015). Foreign language teaching: A problem in Turkish education. *Procedia-Social and Behavioral Sciences*, 174, 584-593. doi:https://doi.org/10.1016/j.sbspro.2015.01.587

35. Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, 8(2), 23-74.

36. Schmidt, R., Boraie, D., & Kassabgy, O. (1996). Foreign language motivation: Internal structure and external connections. *University of Hawaii Working Papers in English as a Second Language 14*(2), 1-72.

37. Seligman, M. E., & Csikszentmihalyi, M. (2000). Special issue on happiness, excellence, and optimal human functioning. *American Psychologist*, 55(1), 5-183.

38. Shernoff, D. J., Csikszentmihalyi, M., Schneider, B., & Shernoff, E. S. (2003). Student engagement in high school classrooms from the perspective of flow theory. *School Psychology Quarterly*, 18, 158-176.

39. Solak, E., & Bayar, A. (2015). Current challenges in English language learning in Turkish EFL context. *Online Submission*, 2(1), 106-115.

40. Tardy, C. M., & Snyder, B. (2004). 'That's why I do it': Flow and EFL teachers' practices. *ELT Journal*, 58(2), 118-128.

41. Tüm, D. Ö., & Kunt, N. (2013). Speaking anxiety among EFL Student Teachers. *Hacettepe University Journal of Education*, 28(3), 385-399.

42. Wang, C. J., Liu, W. C., & Khoo, A. (2009). The psychometric properties of dispositional flow scale-2 in Internet gaming. *Current Psychology*, 28(3), 194-201. doi:10.1007/s12144-009-9058-x