Validation of an EFL learner's self-efficacy questionnaire using the Rasch model

Validación de un cuestionario de autoeficacia del estudiante de EFL usando el modelo de Rasch

Validação de um questionário de autoeficácia do aluno de EFL usando o modelo Rasch

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Abstract

Self-efficacy plays a key role in learners' learning processes by helping or hindering their development (Bandura, 1984). Based on related studies (e.g. Littel, 1991; Lier, 2010) one major point affected on language learning is self-efficacy. To this aim, a 35-item an EFL learners' self-efficacy questionnaire was adapted and validated by the application of the Rasch model. The test was developed in Persian to be used for Iranian EFL learners. A total number of 987 EFL learners learning English in different language institutions of Iran participated in this study. The results revealed that the Rasch model fits the test after removing 10 items from the scale. Moreover, it is confirmed that the scale enjoyed suitable reliability. This proposes that the questionnaire is potentially valid and can be used as a measure of EFL learners' self-efficacy.

Key words: Self-efficacy, validity, Rasch Model, scale adaption, EFL learners.

Resumen

La autoeficacia desempeña un papel clave en los procesos de aprendizaje de los alumnos al ayudar o dificultar su desarrollo (Bandura, 1984). Basado en estudios relacionados (por ejemplo, Littel, 1991; Lier, 2010) un punto importante afectado en el aprendizaje de idiomas es la autoeficacia. Con este objetivo, la aplicación del modelo de Rasch adaptó y validó un cuestionario de autoeficacia de 35 ítems de EFL. La prueba fue desarrollada en persa para ser utilizada por estudiantes iraníes de inglés como lengua extranjera. Un total de 987 estudiantes de inglés que aprenden inglés como lengua extranjera en diferentes instituciones lingüísticas de Irán participaron en este estudio. Los resultados revelaron que el modelo de Rasch se ajusta a la prueba después de eliminar 10 elementos de la escala. Además, se confirma que la escala gozó de una fiabilidad adecuada. Esto propone que el cuestionario es potencialmente válido y se puede usar como una medida de la autoeficacia de los estudiantes de inglés como lengua extranjera.

Palabras claves: Autoeficacia, validez, modelo de Rasch, adaptación a escala, aprendices de inglés como lengua extranjera.

Resumo

A autoeficácia desempenha um papel fundamental nos processos de aprendizagem dos aprendentes, ajudando ou dificultando o seu desenvolvimento (Bandura, 1984). Com base em estudos relacionados (por exemplo, Littel, 1991; Lier, 2010), um ponto importante afetado na aprendizagem de línguas é a

autoeficácia. Para este fim, um questionário de 35 itens de auto-eficácia de alunos de EFL foi adaptado e validado pela aplicação do modelo de Rasch. O teste foi desenvolvido em persa para ser usado para alunos de EFL iranianos. Um total de 987 alunos de EFL que aprendem inglês em diferentes instituições de idiomas do Irã participaram deste estudo. Os resultados revelaram que o modelo Rasch se encaixa no teste após a remoção de 10 itens da escala. Além disso, confirma-se que a escala gozava de confiabilidade adequada. Isto propõe que o questionário é potencialmente válido e pode ser usado como uma medida da auto-eficácia dos aprendentes de EFL.

Palavras-chave: Autoeficácia, validade, modelo de Rasch, adaptação de escala, aprendizes de EFL.

Introduction

Self-efficacy is a personal belief in one's capability to organize and execute courses of action required to attain designated types of performances. Often described as task-specific self-confidence, self-efficacy has been a key component in theories of motivation and learning in varied contexts. Since the publication of Albert Bandura's seminal article entitled 'Self-Efficacy: Toward a Unifying Theory of Behavioral Change,' (1977) countless researchers in the social and behavioral sciences have used self-efficacy to predict and explain a wide range of human functioning. Self-efficacy beliefs provide a motivational force in the cognitive system (Tilfarlioglu, 2009). Bandura (1986) considered it to be a central mediator of effort. Other words, self-efficacy has a key role in mediates the relationship between knowledge and action. Self-efficacy and foreign language learning as major variables have an outstanding impact on student's level of achievement in foreign language learning. As self-efficacy is an influential factor in human behavior, it has been studied in relation to different variables such as career choice (Betz & Hacket, 1986), athletic performance (Feltz, 1982), interpersonal relationship (Kanfer & Zeiss, 1983), career planning (Lent, Brown, & Larkin, 1984), self-regulation (Zimmerman, 2000) and teacher education (Ashton & Webb, 1986; Gibson & Dembo, 1984; Woolfolk & Hoy, 1990). Bandura (1997b) claimed to learn new skills and performing them in authentic situations are much more related to self-efficacy beliefs than the other self-constructs. So, it is self-efficacy that helps us explain the reason why people's behaviors are different when they have similar knowledge. Taking the key function of self-efficacy, as an important affective factor, into account, it is important to pursue the investigation on the value of this factor in EFL context to shed the light on its efficiency in terms of teaching and learning process.

LITERATURE REVIEW

Learners' perceived self-efficacy in English language learning are important issues in education over the last three decades. Self-efficacy is the personal determination of one's own ability to deal with a certain task. Notably, this determination is not based entirely on actual past experience or existing ability and skills but also on students' perceptions of their own knowledge and ability relative to the task or situation (DeTure, 2004). Self-efficacy is a major component of Bandura's (1986) social cognitive theory in that it serves as a primary determinant of individuals' motivation to act. According to Bandura (1997a), self-efficacy is a more consistent predictor of behavior and achievement than any other related variables. He noticed self-efficacy is the most influential arbiter in human agency and has a powerful role in making decisions. Also, he claimed to learn new skills and performing them in authentic situations are much more related to self-efficacy beliefs than the other self-constructs. So, it is self-efficacy that helps us explain the reason of why people's behaviors are different when they have similar knowledge.

Self-efficacy is used to refer to people's beliefs which are concerning their completion of a task and their perceived competency level by performing a task (Bandura, 1977). The term 'self-efficacy beliefs' is defined by Bandura & Schunk (1981: 31) as "people's judgment of their capabilities to organize and execute courses of action required to attain designated types of performances". For Pajares (2000), self-efficacy is the students' judgments of their academic competence. The concept is also defined by Ehrman (1996) as the degree to which the student thinks he or she has the capacity to cope with the learning challenge (Cited in Arnold & Brown, 1999, p. 16).

Since Bandura introduced the concept of self-

efficacy in 1977, many educational researchers (Huang & Chang, 1996; Linnenbrick & Pintrich, 2003; Mills, Pajares, & Herron, 2007) have investigated the role of self-efficacy in learning. These studies revolved around one concept and all emphasized that self-efficacy is an indispensable part of learning and a good predictor of the success of the learner. Self-efficacy beliefs provide a motivational force in the cognitive system (Tilfarlioglu, 2009). Bandura (1986) considered it to be a central mediator of effort. Other words, self-efficacy has a key role for mediates the relationship between knowledge and action. This highlighted the importance of a learner's beliefs and motivation in the learning process, such that learning does not ensure a successful learning experience (Tilfarlioglu, 2009). Self-efficacy theory hypothesizes that people acquire information to evaluate efficacy from their performance accomplishments, vicarious (observational) experiences, forms of persuasion, and physiological indexes (Bandura, 1986).

Self-efficacy is a form of internal motivation and the individual believes that everyone is capable of organizing and executing the required courses of action to achieve the expected level of performance (Bandura, 1997a). Self-efficacy is a motivational construct that influences an individual's preference of activities, the level of achievement, persistence, and performance in a variety of contexts (Zhao, Seibert, & Hills, 2005). Bandura (1986) expresses social cognitive theory provides the basis for explaining how self-efficacy operates as a central focus in a self-regulatory mechanism that directs human motivations and actions.

Self-efficacy has the potential to play a key role in the learning process by helping or hindering the learner's progress (Bandura, 1984). Self-efficacy has increasingly gained attention in research related to student achievement, and a diverse body of educational research has reported the importance of improving the beliefs of self-efficacy in students leading to a positive influence on learners' achievement in EFL contexts (e.g. Rahemi,2007; Rahimi & Abedini, 2009). Self-efficacy is task-specific and differs from context to context. Bandura (1986) posited that various ways are required to assess self-efficacy when tasks vary because the assessment of self-efficacy is task-specific. Therefore, self-efficacy needs to be measured specifically rather than generally. Since language learning differs from other types of learning (Williams, 1994), more attention needs to be paid to how learners develop self-efficacy and what factors affect their

self-efficacy in second/foreign language contexts.

To avoid producing confounded relationships or reaching faulty conclusions, self-efficacy researchers have repeatedly cautioned researchers about the importance of asking the right questions in self-efficacy instruments (Bandura, 2006; Bong, 2006; Pajares, 1997; Pajares & Miller, 1995). Unfortunately, among the second/foreign language self-efficacy research available, conceptual and methodological problems are often found (Mills,2004), which have produced confounded research findings. Self-efficacy scales that are assessing constructs other than self-efficacy, such as language aptitude or general self-confidence, run the risk of reaching faulty conclusions (Bong, 2006); this pseudo 'self-efficacy assessment has plagued the few existing second/foreign language self-efficacy investigations (e.g., Huang & Chang, 1998; McCollum; 2003; Yang, 1999). The problem of self-efficacy assessments lies in the questions and statements involved in those self-efficacy instruments. Reasons for such problematic instruments seem to fall into the following three areas: the confusion with other constructs, the lack of understanding of the task and context-specific nature of self-efficacy, and the failure to ensure correspondence between self-efficacy and its prediction target (Bong, 2006). Self-efficacy measures that fail to be task and context specific as well as to ensure correspondence between self-efficacy and its prediction target are also common problems found in second/foreign language self-efficacy research (Huang & Chuang, 1998; McCollum, 2003). Bandura (1997b) has urged that- self-efficacy beliefs should be measured in terms of particularized judgments of capability that may vary across realms of activity, different levels of tasks demands within a given activity domain, and under different situational circumstances (p. 6). Pajares (1996) has also stressed that self-efficacy scales need to be developed with reference to specific prediction targets that are compatible with the performance outcomes they are meant to predict. However, these cautions have often been ignored in second/foreign language self-efficacy research.

Genç et al (2016) seek to highlight the relationship between Turkish EFL learners' beliefs about language learning and their sense of self-efficacy. The findings demonstrated that EFL students have medium scores in their English self-efficacy and hold the strong belief that motivation factors have a great role in their learning process. The research findings of Alifat

et al. (2016) showed that the role of the components of hidden curriculum (teacher's role, the role of teaching method, the role of assessment, rules, and regulations, physical location and content) on social self-efficacy of students is significant and the most influential factor on social self-efficacy is related to the component of teacher and the least influential factor is related to the component of content.

Moreover, student's beliefs about language learning are affected by their English self-efficacy. Başaran and Cabaroğlu (2014) revealed that teachers of English have frequently observed in their classrooms that students with poor proficiency in English are mostly those who do not believe that they can learn a foreign language. Their study has shown that participants' self-efficacy perceptions have been restructured and improved through a process of positive experiences. This observation has been confirmed by a great amount of research (Tanaka & Ellis, 2003) on self-efficacy in foreign language learning, which has convincingly reported that there is a strong positive correlation between learners' self-efficacy and their EFL achievements. The other study focused on the exploring the relationship between EFL learners' self-efficacy Beliefs and their Language learning strategy use by Bonyadi, Nikou, & Shahbaz (2012). A group of 130 first year university (Urmia) students participated in their study. The findings of the researchers confirmed that there was no relationship between self-efficacy and language learning strategy use. Besides, gender did not play an important role in both self-efficacy and strategy use.

Tilfarlioğlu and Ciftci (2011) conducted a study on 250 students in Turkey. According to the findings of the study, there was a positive relationship between academic success as defined by grades and learners' self-efficacy beliefs. Moghari et al. (2011), in their survey study of 741 Iranian students learning English as a foreign language, found that academic emphasis and teacher's trust in parents and students had a direct and positive effect on learners' English self-efficacy. Li and Wang (2010) explored the relationships between reading self-efficacy and the use of reading strategies in an EFL context. The participants included the second year of English students in China University answered two questionnaires. The findings revealed that reading self-efficacy was in a positive and significant way related to the use of reading strategies. Accordingly, individuals with high self-efficacy in reading applied more reading strategies compared to those with low self-efficacy.

Rahimpour and Nariman-Jahan (2010) revealed the importance of learners' self-efficacy in predicting their achievement. In the line with previous research, the results of this study indicate that learners' self-efficacy is significantly related to their performance in learning English. However, Anaydubalu (2010) in a study that involved 318 students in Thailand found no significant relationship between self-efficacy and English language performance hence the result was not in line with previous studies which indicated that there is a significant relationship between self-efficacy and performance. He claimed that these results were possible because the participants were young (12) and the collective society as a cultural factor appears to discourage students to make a decision on their own.

Another study was done by Rahimi and Abedini (2009) with the aim of examining the relationship between EFL learners' self-efficacy beliefs concerning listening comprehension and listening proficiency. The sample of this study included 61 freshmen undergraduate learners of English and the means of gathering the data were author-designed self-efficacy questionnaire and a listening pre-test adopted from paper-based Longman TOEFL. The analysis of the data gathered showed that listening comprehension self-efficacy is significantly related to listening proficiency. Rahimi and Abedini's (2009) findings provide valuable information to foreign language educators. They indicate that the students' self-beliefs of language ability can influence their language achievement negatively or positively depending on the strength of their efficacy beliefs. Egel (2009) interviewed 20 Turkish undergraduates about their self-efficacy beliefs. Interestingly, the study found that teachers' self-efficacy and ability had effects on learners' English language self-efficacy.
Çakır and Alıcı (2009) found that past successful experiences and social persuasions are influential variables that affect learner's self-efficacy.

The study also indicated that students' perception of their self-efficacy was higher than their instructors' judgment about students' self-efficacy. Some studies pointed out a variety of factors affecting self-efficacy beliefs. Moreover, Greta (2009) also reported that the classroom climate, the interaction between learners and as

well as the interaction between teachers and learners affected learners' self-efficacy. Hsieh and Schallert (2008) also demonstrated that among the different variables used in the study as predictors of achievement, self-efficacy was the strongest predictor of English achievement among South Korean students.

Rahemi (2007) examined English self-efficacy and EFL achievements among students with low proficiency levels majoring in humanities at the senior high school. The study included a structured questionnaire and a measure of EFL achievements and an interview with the English teachers. The analysis of the result showed that students of humanities had no tendency toward English and did not enjoy positive English self-efficacy. Besides, EFL achievements were greatly affected by English self-efficacy. Mills, et al., (2007) have conducted a study focusing on specific skills in language learning. In this research, the relationship between self-efficacy efficacy, anxiety, and gender on the listening and reading proficiency of 95 college students enrolled in a French course in the United States was investigated. The results of the study indicated that there is a significant relationship between reading self-efficacy and reading proficiency for all students and there is a relationship between listening self-efficacy and listening proficiency only for female students. The finding showed that self- efficacy for self-regulation is a strong predictor of the achievement and female students revealed greater self-efficacy for self-regulation.

Duman (2007, p. 3) observed that there have been very few studies about self-efficacy which is thought to have an important effect on academic success and motivation in social sciences and in the field of EFL. Graham (2006) also, in her qualitative research of students learning French in the UK, found that students with low self-efficacy tended to attribute their failure to low ability, a factor which is beyond students' control, whereas students with high self-efficacy attributed their failure to controllable attributions such as insufficient effort or lacking in the use of appropriate strategies.

McCollum (2003) reported in his quantitative study that (1) there was a strong and positive correlation between self-efficacy for learning German as a foreign language and class grades for American college students. That is, foreign language learners with stronger self-efficacy showed higher achievement in language learning

and learners with higher achievement in language reported having stronger language self-efficacy. (2) German language self-efficacy was a significant predictor of semester final grade. Although these findings seem to be in line with the findings provided by research conducted in other academic areas, the conclusion drawn from this study is problematic in that the German self-efficacy measure is problematic. The perceived competence measure in McCollum's (2003) study was a global measure of perceived confidence in learning the four skills of the German language. The items, for example, I am capable of learning a foreign language, did not explicitly tell the respondents what constituted a successful performance in each language skill area. That is, the students in this study did not have a specific criterial language task in mind when they drew on their beliefs of competence. In this sense, the measure of perceived competence in this study is more of a general academic self-confidence measure than a self-efficacy measure.

Cotterall (1999) conducted a study on 113 language learning learners at Victoria University of Wellington. Based on the results of this study, learners' sense of efficacy plays an imperative role to what extent they are successful during their language learning courses. Multon, Brown, and Lent's (1991) meta-analysis of self-efficacy research indicated that the relationship of self-efficacy to performance may vary across types of students and the type of performance measure used. A study designed to investigate the predictive power of self-efficacy beliefs on English as a foreign language achievement of Asian (Taiwanese) college level students regardless of their previous achievement levels is thus desired to validate the effects of self-efficacy beliefs on academic performance.

Some of the studies that conducted about the self-efficacy are by Duman's (2007), Cinkara's (2009) and Yılmaz's (2010). Self-efficacy is a motivational variable in learning and it seems almost impossible to examine some aspects of human functions such as learning, motivation and academic performance regardless of the role of self-efficacy beliefs of the learners (Pajares & Urdan, 2006).

Whereas a large number of researchers have investigated the role of self-efficacy in different areas of learning, less research has focused on self-efficacy beliefs in the context of second and foreign language learning. However, there has

been a growing interest in the field of second language learning in the last ten years about self-efficacy beliefs (Raoofi et al., 2012). Among the different findings, the most consistent one is that learners' self-efficacy for foreign language affects performance in different language domains (Abedini & Rahimi, 2009; Hsieh and Kang, 2010; Mills, Pajares, & Herron, 2007; Tilfarlioğlu & Cinkara, 2011; Wang, Spencer, & Xing, 2009).

Method

Measures
Self-efficacy (Bandura, 1986; Schunk, 1991; Zimmerman, 1989) is a construct which describes the confidence of an individual in their own abilities for organizing and implementing the cognitive, behavioral, or social skills for successful performance of a task. Self-efficacy is defined as the belief in one's capabilities to perform a particular behavior and successfully execute certain actions to attain designated types of goals (Bandura, 1986; Bandura, 1997a; Chen, Greene & Crick, 1998; Gist & Mitchell, 1992).

In this study, EFL Learner's self-efficacy is measured through the questionnaire by Ghodrati, Ashraf & Motallebzadeh (2014) which was adapted based on Nicole's Mills (2004). The test was developed in Persian to be used for Iranian EFL learners. This questionnaire consisted of two parts. The first part emphasized on the demographic profile of the participants such as gender, age range, English level of EFL learners, and duration of participation in English classes; Moreover, the second section provided participants with the content areas under the study on a five-point Likert scale. This questionnaire consisted of 35 items in a five-point Likert scale, ranging from not confident, somewhat confident, moderately confident, confident to very confident. Its reliability based on Cronbach alpha was reported to be 0.80 (Ghodrati, Ashraf & Motallebzadeh, 2014). Cronbach Alpha Analysis was conducted for Persian questionnaire of EFL learner's self-efficacy. All participants were Iranian EFL female and male learners who were Persian native speakers. Since this study was conducted in Iran, where the English language is teaching as a foreign language, the questionnaire translated to Persian through the back-translation procedure. Table 1 showed the Cronbach's α internal consistency reliability coefficient of the scale.

Table 1
Internal Reliability of the EFL learner's self-efficacy Scale, Cronbach Alpha coefficients (α)

Scale	Items	Cronbach's α
EFL learner's self-efficacy	1-35	0.95

Participants

A total number of 987 EFL learners learning English as a foreign language in different language institutions of Iran participated in this study to fill out EFL Learner's self-efficacy questionnaire. They were 357 males (36.2%) and 96 females (63.8%) and from different age groups ranged below 15 to above 30 (Table 2). Participants' native language was Persian with English as a foreign language. The research was approved by the ethics committees of the language institutions. At the time of the administration of the survey, participants were told that their participation was voluntary, and they were reminded not to put their name or any identifying information on the survey, and that all data would remain anonymous and confidential.

Table 2
The demographic profile of respondents

	Category	Frequency	Percentage
Gender	Male	357	36.2
	Female	628	63.8
	Below15	135	13.7

Age range	15-20	482	49.0	
	25-21	134	13.6	
	26-30	100	10.2	
	More than 30	132	13.4	
English level	Intermediate	470	47.6	
	Upper-intermediate	292	29.6	
	Advanced	225	22.8	

Findings

The data were analyzed using Winsteps Rasch software version 3.73 (Linacre, 2009) to confirm the construct validity of the "EFL Learner's self-efficacy" questionnaire. In the area of research and social sciences, the Rasch model (Rasch 1960/1980) has been used widely for analyzing questionnaires and construct validity (Baghaei, 2008). A test is said to be valid when the data fitted the model, which indicates that a construct is underlying the covariance among the items and causes the item responses (Baghaei & Tabatabaee Yazdi, 2016; Borsboom, 2008). Therefore, the data consisting of 35 items and 987 participants were subjected to the Rasch analysis to estimate the fit of data to the model. Item response theory (IRT) models and Rasch models require observing for two assumptions of local independence and unidimensionality (Baghaei, 2009). The data were analyzed using Winsteps Rasch software version 3.73 (Linacre, 2009) to confirm the construct validity of the questionnaire. The fit of data to the Rasch model is evidence that a latent construct underlies the responses and, hence, the test is valid (Baghaei, & Tabatabee Yazdi, 2016).

Individual Item Characteristics

The results of the Rasch analysis with Winsteps® for all the items are shown in Table 3. The items are arranged from the most difficult to the easiest. The first column, 'ENTRY NUMBER', corresponds to the test items (31 in total). 'TOTAL SCORE' indicates the total number of correct responses. 'TOTAL COUNT' is the total number of attempted responses and the 'MEASURE' column is the Rasch measure for this item (the difficulty in logits) followed by the standard error. The infit and outfit statistics are in the next two columns, which show the MNSQ (mean square) and the ZSTD (standardized z-score). Point measure correlations are shown in the eighth column.

Following the criteria recommended by Bond and Fox (2007) the results indicated that all items fit the Rasch model, except ten Items (Items 3, 7, 12, 22, 23, 24, 25, 28, 31 and 33) which have infit and outfit mean square (MNSQ) and outfit and infit (ZSTD) indices outside the acceptable range of 0.60-1.40, and -2 to 2, respectively, so these items should be either deleted or modified because of lack of fit to the model. (Table 3).

Table 3
Item Measures and Fit Statistics for the "EFL Learner's self-efficacy"

Entry Number	Total score	Total count	Measure	Model S.E.	Infit MNSQ	ZSTD	Outfit MNSQ	ZSTD	PT- measure CORR.	EXP.	EXACT OBS%	MATCH EXP%	ITEM
23	2162	987	-.03	0.14	2.20	8.0	2.25	7.9	A 0.30	0.64	54.3	64.5	23
25	3379	987	1.89	0.13	1.31	2.7	1.30	2.6	B 0.55	0.67	59.1	58.8	25
31	2188	987	1.37	0.13	1.27	2.4	1.28	2.4	C 0.54	0.67	62.2	60.2	31
24	4148	987	-2.19	0.16	1.26	2.1	1.22	1.7	D 0.55	0.61	65.2	70.1	24
15	4270	987	-2.16	0.16	1.22	1.8	1.26	2.0	E 0.55	0.61	66.5	70.1	15
17	3356	987	1.33	0.13	1.18	1.6	1.13	1.2	F 0.63	0.67	64.0	60.4	17
30	2392	987	-0.65	0.15	1.18	1.5	1.09	0.7	G 0.64	0.63	66.5	67.0	30
16	3727	987	-2.01	0.16	1.14	1.2	1.15	1.2	H 0.65	0.61	68.9	70.4	16
34	3965	987	-1.06	0.15	1.08	0.7	1.02	0.2	I 0.70	0.62	73.8	68.6	34
19	2756	987	-0.85	0.15	1.07	0.6	1.01	0.1	J 0.74	0.63	64.6	67.8	19
35	3500	987	0.11	0.14	1.06	0.6	1.07	0.6	K 0.61	0.64	65.2	63.8	35
18	3989	987	0.45	0.14	1.03	0.3	1.00	0.1	L 0.66	0.65	63.4	62.4	18
11	3045	987	-0.87	0.15	1.02	0.2	1.00	0.0	M 0.69	0.63	67.7	68.0	11
6	3696	987	0.39	0.14	1.02	0.2	0.98	-0.2	N 0.58	0.65	63.4	62.7	6

4	2890	987	1.49	0.13	0.98	-0.1	0.97	-0.3	O	0.64	0.67	61.6	59.8	4
29	3369	987	0.15	0.14	0.97	-0.2	0.94	-0.4	P	0.73	0.65	73.8	63.5	29
8	3329	987	0.79	0.14	0.96	-0.3	0.93	-.06	Q	0.65	0.66	67.1	61.8	8
5	3801	987	-0.24	0.15	0.92	-0.7	0.95	-0.4	R	0.63	0.64	70.7	65.4	5
1	3192	987	-0.39	0.15	0.93	-0.6	0.93	-0.5	q	0.67	0.64	70.1	66.0	1
13	2854	987	-0.26	0.15	0.93	-0.6	0.90	-0.9	p	0.66	0.64	62.8	65.4	13
27	3623	987	0.97	0.14	0.86	-1.3	0.90	-0.9	o	0.72	0.66	72.6	61.3	27
10	2960	987	-1.86	0.16	0.90	-0.8	0.87	-1.0	n	0.67	0.61	72.6	70.4	10
9	3528	987	-1.10	0.15	0.89	-0.9	0.86	-1.1	m	0.68	0.62	70.1	68.9	9
14	3813	987	0.99	0.13	0.88	-1.1	0.87	-1.2	l	0.66	0.66	67.7	61.3	14
2	3208	987	-0.07	0.14	0.88	-1.1	0.84	-1.4	k	0.63	0.64	68.9	64.6	2
20	3620	987	0.79	0.14	0.87	-1.2	0.84	-1.4	j	0.71	0.66	68.3	61.8	20
21	2552	987	0.25	0.14	0.86	-1.3	0.82	-1.6	i	0.63	0.65	66.5	63.1	21
26	3633	987	-0.01	0.14	0.83	-1.5	0.78	-1.9	h	0.69	0.64	76.8	64.2	26
32	2660	987	-0.36	0.15	0.81	-1.7	0.79	-1.8	g	0.62	0.64	72.6	65.8	32
28	3409	987	0.23	0.14	0.81	-1.8	0.74	-2.4	f	0.77	0.65	68.9	63.3	28
7	2911	987	1.45	0.13	0.81	-1.9	0.78	-2.1	e	0.66	0.67	67.7	60.0	7
33	2162	987	1.03	0.13	0.77	-2.2	0.78	-2.1	d	0.72	0.66	68.9	61.0	33
22	2553	987	0.37	0.14	0.77	-2.2	0.76	-2.3	c	0.69	0.65	74.4	62.7	22
3	3207	987	-0.03	0.14	0.74	-2.5	0.74	-2.4	b	0.65	0.64	73.8	64.5	3
12	3334	987	0.09	0.14	0.73	-2.6	0.72	-2.6	a	0.74	0.64	69.5	63.8	12

Table 3 shows the fit indices for the items. The items are set from difficult to easy. As it is shown the easiest item is item 12 and the most difficult item is item 23. It means that the difficulty of item 12 (the most difficult item) is estimated to be -.03 logits with the standard error (SE) of 0.14, which means one can be 95% sure that the true value for the difficulty of this item lies somewhere between 2.19 to 0.98 logits, i.e., two SE's below and above the observed measure. The analyses of the items yielded an item difficulty range of 0.13 to 0.16 logits with a separation reliability of 0.98. Person separation estimate is 4.34, with a separation reliability of 0.95.

In the Rasch analysis, the person separation index is used instead of reliability indices. Separation reliability indicates how well the person parameters are discriminated on the measured variable. A high separation reliability index shows that there is a strong possibility that persons with high ability estimates have higher ability estimates than persons/items with low estimates (Linacre, 2009). It means that a higher reliability value specifies a strong relationship between the items of the test, while a lower value shows a weaker relationship between the test items. Therefore, the study showed to have a high-reliability value.

Response Scale Analyses

Rating scale structure's properties were also studied. Table 4 shows the category statistics for the 5-point scale. As it is shown, a large portion of the response categories were Categories 4, 3 and 2 respectively.

The infit and outfit mean squares for each category level are the average of the infit and outfit mean-squares associated with the responses in each category, with an expected value of 1.0; values above 1.50 are problematic (Linacre, 2009). As shown in the table, all categories were within the accepted limits.

In evaluating rating scales, the order of the thresholds for items should be studied. It is expected that threshold estimates increase with category values. Disordered thresholds show that the category is not defined clearly for respondents (Linacre, 1999). It means that respondents cannot clearly differentiate the options (Bond & Fox, 2007). To solve this problem, it is recommended to reduce the number of response options by eliminating the neighboring categories (Bond & Fox, 2007; Linacre, 1999). The threshold estimates in this study were shown to be not in order (-4.37, -1.56, 0.91, 5.02). Therefore, it is better to combine category 3 and 4 (moderately confident and confident) because of their close thresholds (-1.56, 0.91) indicate that respondents could not decide which one to select (Baghaei & Cassady, 2014).

Table 4
Category Statistics

Category	Observed Count	%	Observed average	Sample expect	Infit MNSQ	Outfit MNSQ	Andrich threshold	Category measure
1 Not confident	40	1	-1.42	-2.67	1.97	2.05	None	(-5.51)
2 Somewhat confident	491	9	-1.06	-1.03	1.03	1.08	-4.37	-2.99
3 Moderately confident	1877	33	0.46	0.55	0.88	0.85	-1.56	-0.32
4 Confident	2893	50	2.24	2.18	0.90	0.91	0.91	2.98
5 Very confident	439	8	4.03	4.13	1.17	1.05	5.02	(6.13)

Figure 1 represents the Item-person map of the data. Numbers on the right indicate items and # on the left signify persons. Items and persons located on top of the scale are more difficult and more proficient, respectively. On the other hand, items down the scale are easier and less proficient.

A person-item map shows the location of item parameters as well as the distribution of person parameters. It is useful to compare the range and position of the item measure distribution to the range and position of the person to measure distribution. Items should ideally be located along the whole scale to meaningfully measure the 'ability' of all persons (Bond & Fox, 2007).

The person-item map revealed that the items are mainly clustered toward the bottom of the scale. It means that the questionnaire does not cover a wide range of ability, that is test takers endorse the items or their level of agreements with the items is high. More difficult items with lower agreeability levels seem to be required.

Figure 1
Items-person map

```
          PERSON - MAP - ITEM
            <more>|<rare>
    6           +
                |
          .     |
          .     |
    5     .     +
          .     |
          #  T|
                |
    4     .     +
          ####  |
          #     |
          ##    |
    3     ###  S+
        .###### |
          ###   |
          .##   |
    2     .#####  +T  SE25
          #####  |
        ######### M|  SE4    SE7
          ####   |  SE17   SE31
    1     .######  +S  SE14   SE27   SE33
          .###   |  SE20   SE8
          ####   |  SE18   SE6
          .#####  |  SE21   SE22   SE28   SE29
    0     .#### S+M SE12   SE2    SE23   SE26   SE3    SE35
          .##    |  SE13   SE32   SE5
                 |  SE1
          #      |  SE11   SE19   SE30
   -1      .   +S  SE34   SE9
          .#     |
          #  T|
          .    |  SE10
   -2      .   +T  SE16
          .     |  SE15   SE24
          .     |
          .     |
   -3      .    +
            <less>|<freq>
```

Follow-up Analysis

In a follow-up analysis, Items 3, 7, 12, 22, 23, 24, 25, 28, 31 and 33 were removed, and categories 3 and 4 (moderately confident and confident) in response scale were merged to one category, then the scale was reanalyzed. The result showed that the remaining items had the acceptable outfit and infit mean-square fit. Alternatively, a multidimensional Rasch analysis can be conducted to evaluate whether the misfitting items form a separate relevant dimension of the construct (Baghaei, 2012; Baghaei & Aryadoust, 2015).

Discussion

Self-efficacy is mainly a cognitive self-concept of an individual concerning his perceived capabilities in a given task. Self-efficacy plays a key role in learners' learning processes by helping or hindering their development (Bandura, 1984). Based on related studies (e.g. Littel, 1991; Lier, 2010) one major point affected on language learning is self-efficacy. Foreign language learners are supposed to play an active role in their learning, applying the knowledge acquired in the classroom to other situations and have the ability to perform specific tasks. To this aim, researchers validated the EFL learner's self-efficacy questionnaire to examine the Iranian language learners' self-efficacy in Iran using the Rasch rating scale model (Andrich, 1978). The items which do not fit the Rasch model are instances of multidimensionality and candidates for modification, discard or indications that our construct theory needs amending. The items that fit are likely to be measuring the single dimension intended by the construct theory.

Findings of the study confirmed that the Rasch model fits the "EFL learner's self-efficacy" questionnaire after removing ten items from the original 35-item, which confirms the internal validity of the test. An explanation for the misfit of the items could be the vague wording of the items, such as item 3, 22, and 33, and items (23, 24) related to the incomplete sentences and do not thoroughly transfer the meaning at the respondents' views, the complex structure of the items such as item 12 and 7. Furthermore, the other explanation could be the items which learners did not understand the intended meaning of the sentences so this factor caused the multidimensional items, such as item 25, 28, and 31; therefore, a multidimensional Rasch model should be used to analyze the different

subscales of the instrument (Baghaei, 2012; Baghaei, 2013).

The twenty-five items of the EFL learner's self-efficacy questionnaire had an acceptable person separation reliability of 0.95 and item separation reliability of 0.98. Moreover, threshold estimates after deleting the ten items and merging the categories 3 and 4 in response scale to one category, (moderately confident and confident) were shown to be within the accepted range.

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