The role of metacognitive listening strategies awareness and podcast-use readiness in using podcasting for learning English as a foreign language

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ABSTRACT

The aim of this study was to investigate the role of English as Foreign Language (EFL) learners' metacognitive listening strategies awareness and podcast-use readiness in using podcasting technology for learning English as a foreign language. One hundred and forty-one EFL students completed Metacognitive Awareness Listening Questionnaire (MALQ) that assessed their awareness and perceived use of listening strategies in five components including planning-evaluation, directed attention, person knowledge, mental translation, and problem solving. They also completed a questionnaire that assessed their readiness to use podcasting in terms of familiarity, attitude, and experience. Information on participants' frequency of podcast use for learning English, frequency of the internet use, and digital device ownership was also obtained. The result of the analysis revealed that podcasting use was significantly related to metacognitive listening strategies awareness in general and its entire components except mental translation strategies while the strongest correlation was found with problem solving strategies ($r = .49$, $p < 0.01$). Podcasting use was also found to be significantly related to perceived podcast-use readiness and internet use hours. Further, multiple regressions showed that perceived podcast-use readiness, problem solving, and person knowledge -in order of power prediction- were good predictors of podcasting use for learning English as a foreign language.

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1. Introduction

Despite the fast development of technological devices in the 21st century and students' access to a variety of computer-supported tools and applications across disciplines of study, research yields mixed findings concerning the positive influence of technology on learning outcome (Reynolds, Treharne, & Tripp, 2003). It is specifically suggested that the use of web-based courses as learning systems may not necessarily lead to improved performance and both "authoring related" and "learning related" issues should be considered in order to effectively apply e-learning to enhance learning outcome (Paolucci, 1998 cited in Yeh & Lo, 2005, p. 99).

Much of the research in learning related issues has been dedicated to scrutinizing the influence of students' readiness to use technology in terms of access such as computer ownership (Baloğlu & Çevik, 2008) and availability of technological tools/applications (Hew & Brush, 2007), positive attitudes towards the value of using technology for educational purposes (Teo, 2008), experience in terms of use hours per day or week (Beckers & Schmidt, 2003) and technology familiarity in terms of perceived ease of use (Poynton, 2005) and self-efficacy (Torkzadeh & Van Dyke,

2002). It is generally agreed that these factors can affect the successful use of technology among students and teachers.

One string of research on learning related issues, however, has focused on probing into the issue of psychological attributes such as metacognition or the control of cognitive processes that helps students to reflect, understand, and control their own learning (Sánchez-Alonso & Vovides, 2007) and to develop an understanding or perception about how their mind functions (Flavell, 1976) while they learn with technology. It is evident that metacognition helps successful learners in technology-enhanced environments conceive the differences among technological tools, select the most relevant one(s) in consideration of the goal they have set to reach, and further use the chosen tool in the proper way for more efficient learning (Antonietti, Colombo, & Lozotsev, 2008).

Both readiness and metacognitive awareness factors have been extensively examined in isolation to predict the pattern of technology use for educational purposes by students, however, very few studies have paid attention to interrelationship between these two factors and the way the interplay between them can influence technology use. As the pervasive influence of technology on social, personal, and professional relations has brought up the issue of lifelong learning, research on factors affecting the use of innovative technologies seems to require particular attention. Therefore, the current study investigates the role of EFL learners' both perceived readiness to use podcast technology and their metacognitive lis-

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tening strategies awareness in the use of podcast technology for learning English as a foreign language. The study has been done in an EFL context because language education research shows that listening to oral texts in this setting is more challenging than doing written tasks (Vandergrift, 1999). For many years language experts have tried to find ways to assist instructors in helping learners to overcome their listening comprehension difficulties. This ranges from focusing on personal traits (such as learning strategies and styles) to incorporating technology-based listening tasks and activities. However, it is still unknown whether EFL learners' metacognitive listening strategies awareness is related to the use of technological tools and applications – especially podcasting – for doing aural tasks to improve their listening in English.

1.1. Metacognition and e-learning

Metacognition knowledge is a kind of knowledge that helps learners to control the process of learning, to choose a certain type of task or even the medium of learning from among available technological devices, and to use effective strategies to facilitate achieving learning goals (Bannert, Hildebrand, & Mengelkamp, 2009). This knowledge helps students develop ideas on the strengths and weaknesses of e-learning programs (Weiner, 2003) and technology tools (Coolly, 2003), assess their preferences for some cognitive and metacognitive activities involved in Internet-based learning environments (Wen, Tsai, Lin, & Chuang, 2004), and become aware of the processes activated by new e-learning tools (Antonietti et al., 2008).

Participants' metacognition status and its influences during the process of e-learning have been investigated in four directions including planning, visualization, perception (and awareness), and self-evaluation (Shih, Feng, & Tsai, 2008). The general finding of these studies revealed that using computers as metacognitive tools and metacognitively active participants could enhance learning in technology-based environments (Azevedo, 2005; Tsai, 2004) and students have to possess specific metacognitive, cognitive and affective pre-requisites in order to learn successfully with such electronic learning environments (Bannert et al., 2009).

It is further documented in the literature that metacognitive support and prompting can improve learner's achievement and the accuracy of knowledge monitoring (Sánchez-Alonso & Vovides, 2007) and acquiring declarative knowledge (Green, Bolick, & Robertson, 2010), foster help-seeking in online-learning environments (Stahl & Bromme, 2009), affect effectiveness of internet search (Tsai, 2009), improve learning in computer-based environment (Bannert et al., 2009) and complex computer-simulated learning environments (Veenman, Prins, & Elshout, 2002), and impact learning outcome through Computer-Mediated Communication (CMC) such as e-mail interaction (Kramarski & Ritkof, 2002).

Some studies have specified the type of metacognitive strategies that should be activated in online courses. Bannert (2007, cited in Stahl & Bromme, 2009) suggests that both direct metacognitive supports (e.g., explicit training of a strategy) and indirect support (e.g., prompts) can be helpful in knowledge acquisition and deep processing of the information in web-based learning environment. Tsai and Tsai (2003) specify three types of metacognitive online information searching strategies required for basic Internet manipulation and navigation including purposeful thinking, selecting the main idea, and evaluation. They believe that metacognitive strategies may be the most critical variable in successful online inquiry-based learning.

Based on empirical evidence it is suggested that metacognitive instruction should be integrated in e-learning (Kramarski & Zeichner, 2001) and teachers should assess their students' metacognition in order to diagnose poor metacognitive knowledge and intervene to help them become more strategic and metacognitive

(Oxford, 2002; Stadtler & Bromme, 2008). Sánchez-Alonso and Vovides (2007) believe that the assessment of metacognitive strategies in the context of e-learning can be useful in determining which tasks should be set up for an individual learner in order to:

- Improve those aspects in the skill set that the learner has yet to master.
- Learn new strategies or skills that will facilitate the assimilation of concrete concepts during the learning process.
- Increase the learner's confidence in completing correctly certain tasks.
- Study in a more efficient manner relative to time spent and learning outcomes reached (p. 2586).

1.2. The role of attitudes, experience and familiarity in technology use

Users' attitudes towards technology are among the most frequently studied technology-related variables in Information and Communications Technology (ICT) integration literature because it is generally assumed that positive computer attitudes foster computer use for educational purposes. The influence of users' attitudes towards technology on their actual technology use has been supported by theoretical models (e.g., Davis, 1993; Fishbein & Ajzen, 1975) and research-driven findings (e.g., Albirini, 2006; Durndell & Haag, 2002). The general finding of attitudinal studies suggests that any successful implementation of new technology in education requires the development of users' positive attitudes toward it and these positive attitudes take shape as a result of perceived usefulness and ease of use of that technology (Davis, 1993).

Computer use which is characterized as the total number of hours a week or a day individuals spend working with computer has been found to be one of the most important factors that influence computer attitudes (Beckers & Schmidt, 2003). Some studies have linked users' experience with technology to access in terms of physical availability of the devices (Imhof, Vollmeyer, & Beierlein, 2007) and ownership (Baloğlu & Çevik, 2008). There is further evidence in the literature that more experiences with technology increase the degree of self-confidence in using computers, create positive attitudes toward technology and decreases or eradicates computer anxiety (Matthews & Shrum, 2003).

It is also suggested that familiarity with technology plays a crucial role in using technological devices and applications. Poynton (2005) emphasizes that "just as one needs to have reading literacy to benefit from the information made available by the printing press, one must have computer literacy to benefit from the information made available by the personal computer" (p. 862). Evidence from the literature supports the fact that the type of experience with technology (Yushau, 2006) and amount and condition of accessing technology (Kerr, Rynearson, & Kerr, 2006) influence improvement of both computer self-efficacy, in particular, and technology familiarity in general. Moreover, the type of technology experience, amount of use, and certain knowledge and skills that some instructional delivery systems – like distance learning programs – or certain web-based applications-such as searching – demand, may lead to higher computer literacy, lower computer anxiety, and more frequent use of those technologies (Poynton, 2005).

1.3. Podcasting technology and language learning

The word podcast is a combination of the words iPod (a popular portable media player) and broadcast (Rosell-Aguilar, 2007). However, as audio files commonly in mp3 format, they can be played by a number of portable media players such as desktop computers, laptops, and mobile phones. The widespread use of podcasting among students for entertainment and information exchange

and/or retrieval has guided educators to explore its benefits for mobile learning to "improve communication and learning access for many student populations" (Walls et al., 2010 p. 371). Research on podcasting in higher education shows that podcasting can influence learning outcome (McKinney, Dyck, & Luber, 2009), students' motivation (Bolliger, Supanakorn, & Boggs, 2010) and understanding theoretical issues (Lazzari, 2009) and is beneficial for slower learners, learners with learning disabilities, and non-native speaker learners in distance learning or blended programs (Sloan, 2005; Walls et al., 2010).

For a broad range of disciplines classroom podcasts are used for substitutional (substituting classroom lectures), supplementary (additional materials for classroom teachings), and creative (students' podcasts) purposes (Heilesen, 2010). However, language learning benefits administrative (general information, guides, etc.) and special lecture series (guest lectures, commencement lectures, etc.) (Vogele & Gard, 2006) podcasts as well. Rosell-Aguilar (2007) believes that two types of podcasts are commonly used in language education: the podcasts with authentic content that are produced and mainly used by native speakers such as news, and podcasts that are prepared for language courses. The latter can be further classified into stand-alone language courses and add-on activities and materials for specific classes or independent audience.

The benefit of using podcasting in language education has been supported by both theory and practice. A range of learning theories such as constructivism, informal and lifelong learning, and authentic input for language learning (Rosell-Aguilar, 2007) support the use of podcasting in language education. Additionally, the following defining characteristics of podcasts can support language acquisition: listening repeatedly, controlling the speed of the feedback, listening anywhere at any time (if the users have portable devices available), free and individual choice of what to listen to, and authentic input that can be accessed easily and free of charge (Heilesen, 2010).

Research shows that podcasting can support language acquisition in many respects including aural skills (Lee, 2009), cross-cultural awareness (Stanley, 2006), pronunciation and speaking ability (Powell, 2006), and motivation (Stanley, 2006). However, most research on the use of podcasting in language learning has focused on technical issues of creating and distributing podcasts, rather than an understanding of how the medium affects the teaching and learning based on second language acquisition theories and how individual attributes may affect the use of such technology in EFL setting.

1.4. Metacognitive listening strategies

It is suggested that metacognition plays an important role in many cognitive activities related to language use such as oral communication of information, oral persuasion, oral comprehension, reading comprehension, writing and language acquisition (Flavell, 1976).

Metacognitive strategies are "higher order executive skills that may entail of planning for, monitoring, or evaluating the success of activity" (O'Malley and Chamot, 1990, p. 44) to manage, direct, regulate, and guide learning. It is evident that the development of learners' communicative competence and language proficiency is associated with the use of these strategies (Oxford, 2002). While the relationship between metacognitive strategies awareness and language written skill acquisition and development has been extensively investigated in the literature (e.g., Sheorey & Mokhtari, 2001), it is only recently that the importance of metacognitive awareness in listening comprehension has been highlighted.

Metacognitive listening strategies include five types of strategies: problem-solving, planning and evaluation, mental transla-

tion, person knowledge, and directed attention (Vandergrift, Goh, Mareschal, & Tafaghodtari, 2006). Problem-solving represents a group of strategies listeners use to guess what they do not understand in the process of listening (inference) and to monitor these inferences (Vandergrift et al., 2006). Planning and evaluation strategies are those types of strategies that listeners use to prepare themselves for listening tasks and to evaluate the results of their listening efforts (Richards, 1990). Mental translations are those types of strategies that listeners must avoid if they want to become skilled listeners (Vandergrift, 2003). Person knowledge strategies include listeners' perceptions and attitudes concerning the difficulty of the listening task and their self-efficacy about second language (L2) listening (Sparks & Ganschow, 2001). Directed attention represents strategies that listeners use to concentrate and stay on listening task (Rost, 2002). Examples of listening strategies are summarized in Table 1.

Metacognitive strategies awareness is defined as "planning and consciously executing appropriate actions to achieve a particular goal" (Sheorey & Mokhtari, 2001, p. 432) and in case of listening it is the listeners' awareness of these five types of strategies that they utilize in the process of listening to the language input. Based on the theory of metacognition, the metacognitive listening strategies awareness involves in the extent to which language learners are aware of their strategies and can regulate the process of L2 listening comprehension (Vandergrift et al., 2006).

Empirical evidence shows that the effective use of metacognitive listening strategies plays a large role in successful listening comprehension (Vandergrift, 2003), helps students to increase their self-regulation and autonomy in listening (Vandergrift, 2002), and has a significant relation with students' motivation for language learning (Vandergrift, 2005) and listening self-efficacy (Vandergrift, 2005). However, very limited studies have probed into the issue of metacognitive listening strategies awareness and language task type especially when doing the listening task involves the use of technology.

Table 1
Examples of metacognitive listening strategies (Vandergrift et al., 2006, pp. 450–1).

| Metacognitive listening strategies	Examples
Problem solving	Using known words to deduce the meaning of unknown words; using the general idea of a text to deduce unknown words; using one's experience and general knowledge in interpreting the text; adjusting one's interpretation upon realizing that it is not correct; monitoring the accuracy of one's inferences for congruency with the developing interpretation; comparing the developing interpretation with one's knowledge of the topic
Planning and evaluation	Having a plan for listening; thinking about similar texts as a guide for listening; having a goal in mind while listening; periodically checking one's satisfaction with the ongoing interpretation while listening; evaluating the strategic effectiveness of one's listening efforts
Mental translation	Avoiding translation in one's head while listening; avoiding translation of the key words; avoiding word for word translation
Person knowledge	Assessing the perceived difficulty of listening compared with the three other language skills; assessing learners' linguistic confidence in L2 listening; assessing the level of anxiety experienced in L2 listening
Directed attention	Getting back on track when losing concentration; focusing harder when having difficulty understanding; recovering concentration when one's mind wanders; not giving up when one experiences difficulties understanding
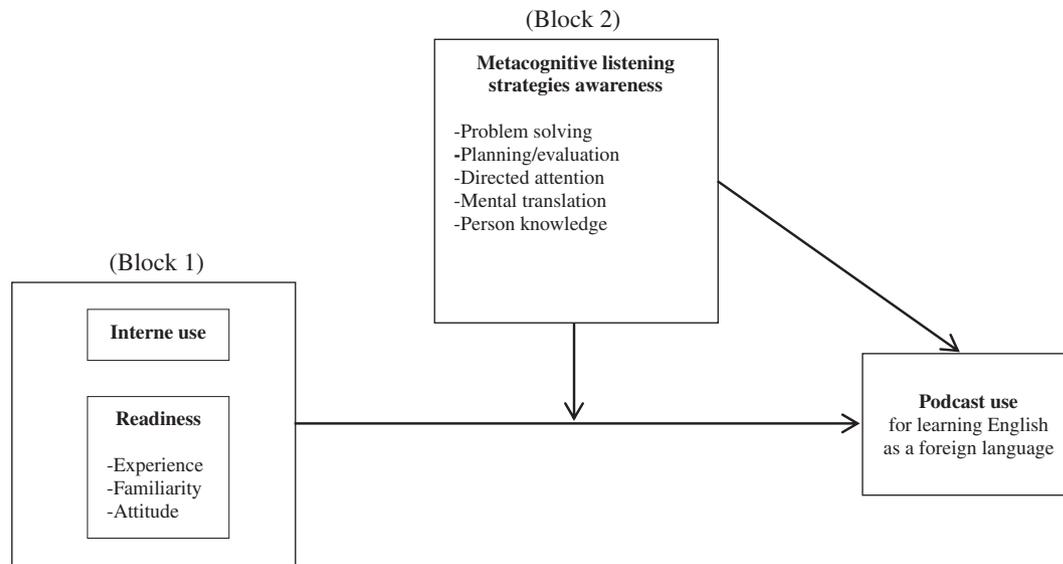
Fig. 1. The theoretical framework of the study.

1.5. The present study

It is evident in the literature that a person's behavioral intention concerning the use of an application is determined by perceived usefulness (the belief that using an application will increase one's performance) and perceived ease of use (the belief that one's use of an application will be free of effort) (Davis, 1993). Therefore, it can be hypothesized that experience of podcast use, familiarity with podcasting, and attitudes towards it (readiness) are determining factors of podcast-use for learning English as a foreign language. Further, research on metacognition suggests that learners develop personal beliefs about the value of educational technologies that they are asked to employ and that such beliefs can influence learners' use of technology and ultimately learning outcomes (Antonietti et al., 2008). Therefore, students' metacognitive listening strategies awareness is also hypothesized to predict podcasting use for learning English as a foreign language. The theoretical framework of the study is shown in Fig. 1.

Based on this theoretical framework, the current study tries to answer the following questions:

1. Is there any relationship between metacognitive listening strategies awareness and podcasting use for learning English as a foreign language?
2. Is there any relationship between metacognitive listening strategies awareness and their readiness to use podcast (attitude, familiarity, experience) in learning English as a foreign language?
3. Are students' readiness (podcast attitude, familiarity, experience) and metacognitive listening strategies awareness predictors of podcast use for learning English as a foreign language?

2. Method

2.1. Participants

Participants of the present study were 141 university students of four universities in Tehran. The students were introduced to podcast technology and its usefulness in language learning; however, using podcasts was not a requirement for the fulfillment of the course. The sample consists of 57 (40.4%) male and 84 (59.6%) female students.

A majority of the sample (89.4%, *n* = 126) reported to have a digital device that can be used to play mp3 files including laptops, mp3 player, desktop computer and mobile phone. The average time respondents reported to spend on working with their devices was 13 h per week. They also reported to spend more than 8 h per week on using the internet.

2.2. The instrument

2.2.1. Personal information form

The participants were asked to provide information about the following personal variables: age, gender, ownership of technological devices, internet and technological device use, and technological device access. Internet and device use hours were assessed by giving the following options: never, 1 h a week, 2 h a week, 3 h a week, more than 3 h a week specified by respondents.

2.2.2. Podcasting use scale

Podcasting use was assessed by asking respondents to determine their habit of working with podcasting for seven purposes such as listening to English songs, class lectures, audio books, and news. The students should choose one of the following options to describe how often they did the activities: (1) never, (2) at least monthly but not weekly, (3) at least weekly but not daily, (4) once a day, (5) twice a day, and (6) three or more times a day. The Cronbach's alpha reliability coefficient of the scale was found to be .92.

2.2.3. Podcast-use readiness questionnaire

Students' readiness towards using podcasting was assessed using podcast-use readiness questionnaire adapted from Walls et al. (2010). The questionnaire had 10 closed-ended items that assessed students familiarity with podcasting (four items), podcasting experience in learning (three items), and attitudes towards the value of podcasting in learning English as a foreign language (three items). The questionnaire anchored on a 5-point Likert scale ranging from 'not at all' like me to 'very much' like me.

To investigate factor structure of the questionnaire, a principal components analysis (PCA) with varimax rotation was used with a sample of 152 students prior to the main study. PCA was used because it has been suggested that it is a psychometrically sound technique and it is mathematically simpler than factor analysis (Strevens, 1996). As there were at least 10 cases for each variable

and the number of participants exceeded 150, it was assumed that the number of sample was suitable for PCA (Nunnally, 1978). Also, inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser–Meyer–Olkin value was .74, exceeding the recommended value of .6 (Tabachnik & Fidell, 2007) and Bartlett's test of Sphericity reached statistical significance (Approx. Chi-Square = 1205, df = 45, sig = .000), supporting the factorability of the correlation matrix. Principal components analysis revealed the presence of three components with eigenvalues exceeding 1.0 that explained a total of 76.75% of the variance (Table 2).

This was further supported by the result of Parallel Analysis which showed only three components with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (10 variables × 152 respondents) (Table 3).

The Cronbach's alpha reliability coefficient of the instrument was found to be .81. The reliability coefficients of the subscales were also found to be .76 for familiarity, .92 for attitude, and .75 for experience.

2.2.4. Metacognitive Awareness Listening Questionnaire (MALQ)

Metacognitive Awareness Listening Questionnaire (MALQ) developed and validated by Vandergrift et al. (2006) was used to assess language learners' awareness and perceived use of listening strategies. The questionnaire contains 21 items and each item is rated on a six-point Likert scale rating from 1 (strongly disagree) to 6 (strongly agree) without a neutral point so that respondents could not hedge. MALQ consists of five factors including problem-solving (six items), planning and evaluation (five items), mental translation (three items), person knowledge (three items), and directed attention (four items).

To investigate factor structure of MALQ, a principal components analysis (PCA) with varimax rotation was used with a sample of 214 students prior to the main study. Prior to performing PCA, the suitability of data for factor analysis was assessed (number of

participants and inspection of the correlation matrix). The Kaiser–Meyer–Olkin value was .73, exceeding the recommended value of .6 and Bartlett's test of Sphericity reached statistical significance (Approx. Chi-Square = 1768, df = 210, sig = .000), supporting the factorability of the correlation matrix. Principal components analysis revealed the presence of five components with eigenvalues exceeding 1.0 that explained a total of 61.14% of the variance (Table 4).

This was further supported by the result of Parallel Analysis which showed only five components with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (21 variables × 214 respondents) (Table 5).

Table 2
Summary of items and factor loadings from factor analysis.

Items	Factor loadings		
	1	2	3
Familiarity			
I am familiar with podcasting technology	.906		
I can locate podcasts on the internet	.913		
I can subscribe to podcasts	.738		
I can work with audio files on my device	.682		
Attitudes			
I think podcasts can help me learn English better		.882	
I think podcast is a valuable resource for learning and teaching English		.944	
I think podcasts are not as valuable as in-class lectures in learning English		.907	
Experience			
I have downloaded podcasts for learning English before			.340
I have listened to English podcasts before			.943
I have had classes that provided me with podcasts before			.925
Variance	44.934	19.22	12.59

Table 3
Comparison of eigenvalues from PCA and criterion values from parallel analysis.

Component number	Actual eigenvalue from PCA	Criterion value from parallel analysis	Decision
1	4.493	1.451	Accept
2	1.922	1.293	Accept
3	1.259	1.192	Accept

Table 4
Summary of items and factor loadings from factor analysis.

Items	Factor loadings				
	1	2	3	4	5
Problem-solving					
1. I use the words I understand to guess the meaning of the words I don't understand	.783				
2. As I listen, I compare what I understand with what I know about the topic	.576				
3. I use my experience and knowledge to help me understand	.749				
4. As I listen, I quickly adjust my interpretation if I realize that it is not correct	.345				
5. I use the general idea of the text to help me guess the meaning of the words that I don't understand	.784				
6. When I guess the meaning of a word, I think back to everything else that I have heard, to see if my guess makes sense	.547				
Planning/evaluation					
7. Before I start to listen, I have a plan in my head for how I am going to listen		.415			
8. Before listening, I think of similar texts that I may have listened to.		.626			
9. After listening, I think back to how I listened, and about what I might do differently next time		.854			
10. As I listen, I periodically ask myself if I am satisfied with my level of comprehension		.765			
11. I have a goal in mind as I listen		.822			
Directed attention					
12. I focus harder on the text when I have trouble understanding			.823		
13. When my mind wanders, I recover my concentration right away			.713		
14. I try to get back on track when I lose concentration			.789		
15. When I have difficulty understanding what I hear, I give up and stop listening			.688		
Mental translation					
16. I translate in my head as I listen				.880	
17. I translate key words as I listen				.850	
18. I translate word by word, as I listen				.818	
Person knowledge					
19. I find that listening in English is more difficult than reading, speaking, or writing in English					.819
20. I feel that listening comprehension in English is a challenge for me					.875
21. I don't feel nervous when I listen to English					.719
Variance	23.05	12.13	10.21	8.56	7.18

Table 5
Comparison of eigenvalues from PCA and criterion values from parallel analysis.

Component number	Actual eigenvalue from PCA	Criterion value from parallel analysis	Decision
1	4.841	1.597	Accept
2	2.548	1.491	Accept
3	2.144	1.409	Accept
4	1.799	1.342	Accept
5	1.509	1.273	Accept

Confirmatory factor analysis was also conducted based on data collected from a second sample ($n = 204$) prior to the study using AMOS 18, to see if a five component scale had a good fit. Table 6 illustrates the fit indices of a five factor model including chi square (χ^2), root mean square error of approximation (RMSEA), comparative fit index (CFI), the goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), and incremental fit index (IFI) and their acceptable fit indices (Schermelleh-Engel & Moosbrugger, 2003). As Table 6 shows, the statistics indicate a reasonable fit of the measurement model to the data.

Reliability coefficients of .82 (Baleghizadeh & Rahimi, 2011) and .85 (Shirani & Yamat, 2011) with Iranian samples have been reported. The reliability coefficient of MALQ in this study was estimated to be .74.

3. Results

3.1. Descriptive statistics

Table 7 summarized 141 university students' means, standard deviations and per item averages (i.e., mean/items) on MALQ and its subsections, podcast use scale, and readiness. The average scores in MALQ and its subscales ranged from 3.29 to 4.59 while each item was measured by a 6-likert scale, implying that students in overall had medium level of metacognitive listening strategies awareness. The mean of podcasting use was 3.48 implying that the frequency use of podcasting in learning English is roughly at a medium level among Iranian EFL university students. The mean of readiness is 4.80, while each item was measured by a 5-likert scale, implying that students' readiness towards using podcast in learning English as a foreign language with respect to familiarity, experience, and attitude is quite satisfactory. The mean of internet use shows that students on average spend more than 8 h per week working with the internet.

Table 6
Fit indices of a five component MALQ.

Fit measure	Acceptable fit	Model value
χ^2	$3 < \chi^2/d < 5$	1.57
RMSEA	$0.05 < RMSEA < 0.08$	0.05
CFI	$0.95 < CFI < 0.97$	0.97
GFI	$0.90 < GFI < 0.95$	0.90
AGFI	$0.85 < AGFI < 0.90$	0.86
IFI	$0.90 < IFI < 0.95$	0.97

3.2. Inter-correlation among variables

Table 8 presents inter-correlation among variables. As Table 8 illustrates, podcasting use was significantly related to metacognitive listening strategies awareness in general and four types of strategies (planning-evaluation, directed attention, person knowledge, and problem solving). Podcasting use was also found to be related to perceived readiness and internet use hours.

Further, metacognitive listening strategies awareness found to be related to internet use hours. Four types of strategies (planning-evaluation, directed attention, mental translation, and problem solving) were also significantly related to internet use hours.

Podcast-use readiness was significantly related to metacognitive awareness strategies in general, all types of strategies, and internet use hours.

3.3. Predictors of podcast use

In order to determine the proportion of the variance in podcast use that could be explained by the selected independent variables of this study, multiple regressions analysis was performed (Tabachnik & Fidell, 2007). The main analysis was modeled as a hierarchical regression in two steps. In the first step two variables, i.e., the perceived readiness to use podcast and the internet use hours per week are considered. The second step adds strategies related factors. R^2 changes are given.

Table 9 provides the summary of the hierarchical regression analysis regarding the effects of variables predicting podcast use technology for EFL learning according the model.

In Step 1, the variables predicted 41.7% of the podcast use for EFL learning while just the perceived readiness was a significant predictor ($\beta = .671$, $F(2,138) = 49.424$, $p < .01$).

In Step 2, the five strategy variables were added. These variables significantly increased the prediction power by 5.7% of the variance ($\Delta R^2 = .057$, F change $(5,133) = 2.88$, $p < .01$) to a total of 47.4%. Problem solving ($\beta = .182, p < .01$) and person knowledge ($\beta = .120, p < .01$) were found to be significant predictors of podcasting use. Other three strategies, i.e., directed attention, planning-evaluation, and mental translation, did not explicitly predict podcasting use for EFL learning.

4. Discussion

The goal of this study was to investigate the effects of perceived readiness and metacognitive strategy awareness on the use of podcasting technology for educational purposes among EFL university students in a foreign language setting. Readiness in terms of attitude, experience, and familiarity and metacognitive listening strategies awareness with five main components that is planning-evaluation, directed attention, person knowledge, mental translation, and problem solving were used to determine the predictors of podcast use for learning English as a foreign language.

Table 7
Descriptive statistics on MALQ, podcast use scale, and podcast-use readiness.

Scale	Number of items	Possible range	Mean	SD	Average per item
MALQ	21	21–126	82.09	11.48	3.90
Planning evaluation	5	5–30	21.04	3.87	4.20
Directed attention	4	4–24	15.65	3.14	3.91
Person knowledge	3	3–18	9.87	2.15	3.29
Problem solving	6	6–36	27.55	4.53	4.59
Mental translation	3	3–18	12.59	3.61	4.19
Podcasting use	7	7–42	24.36	7.34	3.48
Readiness	10	10–50	48.02	17.16	4.80
Internet use	1	1–no limit	8.91	13.02	–

Table 8
Inter-correlation among variables.

Variables	1	2	3	4	5	6	7	8	9
1. Podcasting use	1	.497**	.268**	.163*	.280**	.104	.492**	.644**	.266**
2. MALQ		1	.649**	.662**	.138	.531**	.869**	.533**	.458**
3. Planning evaluation			1	.277**	.006	.261**	.525**	.227**	.220**
4. Directed attention				1	−.073	.191**	.566**	.149*	.218**
5. Person knowledge					1	−.092	.086	.246**	.025
6. Mental translation						1	.252**	.289**	.298**
7. Problem solving							1	.562**	.438**
8. Readiness								1	.480**
9. Internet use									1

* Correlation is significant at the 0.05.
** Correlation is significant at the 0.01.

Table 9
Summary of hierarchical regression analysis for variables predicting podcast use ($N = 141$).

Independent variables and interactions	b	SEb	β
Step 1			
Readiness	.287	.027	.671**
Internet use hours	.027	.031	.056
Step 2			
Readiness	.238	.032	.555**
Internet use hours	.036	.031	.074
Planning evaluation	.165	.123	.087
Directed attention	−.011	.160	−.005
Person knowledge	.410	.194	.120*
Mental translation	−.186	.121	−.091
Problem solving	.295	.148	.182*

Note: $R^2 = .417$ for Step 1; $\Delta R^2 = .057$ ($p < .001$). Total explained variance: $R^2 = .474$.
* $p < .05$.
** $p < .01$.

The findings of the study revealed that EFL university students' metacognitive listening strategies awareness is at a medium level. The satisfactory level of listening strategies awareness in learning English as a foreign language corresponds with the view that a threshold level of metacognitive strategies awareness is required for language learners to be able to manage themselves as learners, the general learning process, and specific learning task (Oxford, 2002).

It was also found that podcasting use for learning English as a foreign language was roughly at a medium level. This supports the fact that when technology is not infused in instruction by curriculum designers and instructors, its educational value and usefulness are hardly acknowledged by students (Rahimi & Yadollahi, 2011). Actually, an examination of individual items of podcasting use scale supports this fact, as students used podcasting mostly to listen to English songs (mean = 4.57) and listening to audio books (mean = 2.68) and instructors' lectures (mean = 2.64) were not very prevalent among students.

Further, podcasting use was found to be related to the internet use hours. It is suggested that general technological knowledge and technical competence increases as a result of computer experience and access (Bozionelos, 2001) due to their effect on computer attitude, anxiety, and self-efficacy (Torkzadeh & Van Dyke, 2002). This is confirmed in the current study by a positive and significant relationship between perceived podcast-use readiness and podcasting use for educational purposes, while readiness was found to be the strongest predictor of technology use. This finding corroborates the theoretical models and research findings on the relationship between technology use for educational purposes and technology acceptance in terms of positive attitude, experiences with technology and ease of use. It is specifically documented in the literature that students' use of podcasting technology in the process of learning can be predicted by their attitudes (Moss, O'Connoraand, &

Whitea, 2010; Walls et al., 2010). However, more studies on the role of computer-related constructs such as computer self-efficacy and computer anxiety seems to be required to shed more light on this issue.

Metacognitive listening strategies awareness was found to be significantly related to podcast use for learning English. This shows that like other web-based applications such as hypermedia (Azevedo, 2005), searching (Stahl & Bromme, 2009), and e-mail interaction (Kramarski & Ritkof, 2002), podcasting use for language learning is also related to metacognitive strategies awareness and that metacognitive awareness is essential in using this technology for educational purposes (Tsai & Tsai, 2003). This finding can be explained from two perspectives:

First, there is some empirical evidence that an important difference between more-skilled and less-skilled L2 listeners lies in their use of metacognitive strategies (e.g., O'Malley and Chamot, 1990; Vandergrift, 2003). This awareness helps to make the task of listening less problematic and let students comprehend the listening material better (Vandergrift, 2004). Thus metacognitive listeners' 'orchestration' of a number of metacognitive and cognitive strategies helps them to play active role in the process of learning, to manage and direct their own learning and eventually to find the best ways to practice and reinforce what they have learned (Chari, Samavi, & Kordestani, 2010). So their tendency to choose the materials/technology applications that are related to listening increases although listening is basically more difficult than other language skills (Vandergrift, 2004).

Second, the reason can be related to the issue of students' listening self-efficacy. It is evident in the literature that self-efficacy is an important issue in strategy use to control and regulate learners' process of learning (Oxford, 2002). The use of metacognitive strategies and learners listening self-efficacy are interrelated (Vandergrift, 2005). When self-efficacy increases, individuals' perception that they can successfully complete a task or series of tasks increases. Consequently, students with higher levels of awareness may spend more time on listening to audio input and are more able to deal effectively with learning tasks and resources that are related to this skill. Hence, more metacognitive students work more frequently with podcasting technology to listen and download the audio files in comparison to less metacognitively aware students. Further, as perceived readiness has been found to be related to metacognitive listening strategies awareness, it can be concluded that those students who perceived themselves as being more ready to use podcast technology, were more aware of their metacognitive listening strategies and appeared to listen more frequently to aural input using a technology that basically works with audio materials.

Further, two strategies – problem solving and person knowledge – were found to have a significant predictive value for podcasting use by EFL students.

It is evident in the literature that problem solving strategies play a large role in students' success in learning (Chamot, Dale,

O'Malley, & Spanos, 1992). Effective problem solvers maintain a reflective view of their own problem solving processes, analyze related information, look for possible solutions, check the accuracy of alternative solutions, brainstorm a variety of alternative plans or solution strategies, activate what has already been learned, and try to apply the previous knowledge with the current problem (Dirkes, 1985 cited in Chamot, Dale, O'Malley, & Spanos, 1992). As application of problem solving strategy makes students more autonomous learners who are in control of their learning process (Chamot, Dale, O'Malley, & Spanos, 1992) and more motivated to overcome their frustrations in e-environments (Tsai, 2009), in this case those who were more aware of their problem solving strategies in listening, tended to use podcasting more for learning English as a foreign language regardless of the fact that the curriculum does not infuse technology in EFL classes. Further, high level of problem solving strategy awareness helped them self-regulate their learning in respect to time-management and physical and social environment of learning by choosing an appropriate learning task (Meyer, Abrami, Wade, Aslan, & Deault, 2010).

It was also found that person knowledge strategy can predict the use of podcasting for learning English as a foreign language. Person knowledge is defined as judgments and beliefs about one's learning abilities and knowledge about internal and external factors that affect the success or failure in one's learning knowledge (Vandergrift et al., 2006). Person knowledge strategies lower L2 listening anxiety, increase students' positive beliefs about themselves as good listeners, and motivate them to do more listening tasks (Dornyei & Skehan, 2003). The fact that person knowledge could predict podcast use corroborates with a few other studies that belief is a good predictor of podcast use in the process of learning (Moss, O'Connoraand, & Whitea, 2010). It should also be noted that students' positive beliefs to become engaged in an aural task that demands working with podcasting is related to their perceived readiness to use podcasting as readiness and person knowledge are positively related ($r = .246$, $p < .01$).

5. Implications and applications

The study demonstrated that metacognitive listening strategies awareness is related to podcast use for learning English as a foreign language. This finding underlines the need to heighten students' strategy awareness and use especially in technology-based learning environments. One way to promote this awareness is including awareness–raising activities in EFL instructional materials to draw students' attention to different learning strategies that make them more motivated and self-regulated in the process of language learning (Zhang & Goh, 2006). As EFL program in Iran is basically teacher and text centered, the importance of producing teaching and learning materials on the basis of students' needs analysis and research-driven postulations is highlighted.

Further, university instructors as well as EFL teachers should become familiar with strategy-based instruction to broaden their strategy repertoires and increase their confidence and ability in teaching students how to use metacognitive strategies especially in learning with technology. Research is required to scrutinize instructors' current level of strategy awareness and their perception of the value of metacognitive knowledge in the process of teaching and learning particularly with technology.

Moreover, as podcasting use for EFL learning was roughly at a medium level, qualitative research (such as focus group interviews) should be done to detect students' sources of avoidance of podcasting or using it for reasons other than educational purposes while their level of readiness is satisfactory. Based on the findings remedial actions should be taken.

As the rate of technology device ownership is high among Iranian students (Rahimi & Asadollahi, 2011), integration of techno-

logical applications of different types in EFL classes is recommended. This calls for a reform in higher-education syllabus design and materials development in countries like Iran in which the current curriculum does not stipulate patterns of ICT integration in instruction and ICT use policy is decided by university boards or instructors, although technological infrastructures are well developed and satisfactory access is provided.

It has been found that most instructors show resistance towards using innovative technology in their classes due to negative attitudes. Therefore familiarizing them with research-driven advantages of the second generation of CMC known as Web 2.0 technologies (blogs, wikis, podcasts, and RSS feeds) is necessary. These applications are called social software because they are perceived as being especially connected and allow users to develop Web content collaboratively (Alexander, 2006). Moreover, they are open to the public and do not need much technical knowledge of computer.

Although this study showed a strong relationship among metacognitive listening strategies awareness, readiness to use podcasting and actual use of podcasting for learning English as a foreign language, follow-up studies are required to focus on the effect of podcasting use on students' listening abilities. Also, qualitative data gathering procedures (e.g., observation and interviews) and multiple sources of data can be included in further studies.

6. Conclusion

Studying the role of students' metacognition knowledge in learning languages with technology is extremely important. Language learners are often overwhelmed by too much unfamiliar vocabulary, confusing rules, different writing systems, and social customs (Figura & Jarvis, 2007) and when they experience e-learning, at the same time, they work with technological devices/applications that demand activation of certain parts of their cognitive and metacognitive enterprises. Therefore, more research on metacognition awareness in computer assisted language learning (CALL) environment is required to determine how students can be taught to apply the cognitive resources in order to activate their repertoire of metacognitive knowledge and strategies (Birjandi, Mirhassani, & Abbasian, 2006) and to enhance their language learning with technology around.

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