



## A Mixed-Methods Approach to Exploring EFL Listening Strategy Use: Bangladeshi Tertiary Learners' Perceived and Task-Based Strategy Use

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This study explored strategy use as metacognition in action among tertiary-level learners in an input-poor EFL context of Bangladesh. It specifically investigated relationship between strategy use and listening comprehension and differences between the less successful listeners (LSLs) and the more successful listeners (MSLs) in two conditions- off-line, perceived and on-line, task-based. Employing an explanatory mixed-methods design, data were collected in two phases: 1) perceived strategy use via a Listening Strategy Questionnaire and listening comprehension via a practice IELTS test from a larger sample of 388, 2) task-based strategy use via think aloud protocols and listening task performance from a subsample of 30. Data were analysed using Correlations and ANOVA in Phase I, and content analysis (Correlations and Mann-Whitney U) and thematic analysis in Phase II. Contrary to almost no significant findings in perceived strategy use, task-based strategy use revealed significant correlations for overall metacognitive strategies and several individual strategies. Task-based strategy use further revealed both significant and in-depth differences in strategy orchestration between the LSLs and MSLs. The study has methodological and pedagogical implications: triangulation of findings advocates for think aloud technique as a more productive and reliable tool; EFL listeners (particularly the LSLs) can benefit from the dynamic strategic behaviour of the MSLs.

এই গবেষণাটি বাংলাদেশের ইনপুট-দরিদ্র ইএফএল প্রেক্ষাপটে বিশ্ববিদ্যালয়ের শিক্ষার্থীদের মধ্যে কর্মে মেটাকোগনিশন হিসাবে কৌশল ব্যবহার অন্বেষণ করেছে। বিশেষ করে এটি ইংরেজিতে শ্রবণ দক্ষতা এবং কৌশল ব্যবহার এর মধ্যে সম্পর্ক এবং কম সফল শ্রোতাদের (এলএসএল) এবং বেশি সফল শ্রোতাদের (এমএসএল) মধ্যে কোনো পার্থক্য আছে কি না তা দুটি অবস্থায় তদন্ত করেছে - অফ-লাইন, অনুভূত এবং অন-লাইন, কাজ-ভিত্তিক। একটি মিশ্র গবেষণা পদ্ধতি প্রয়োগ করে, দুটি পর্যায়ে তথ্যউপাত্ত সংগ্রহ করা হয়: ১) একটি শ্রবণ কৌশল সংক্রান্ত প্রশ্নাবলীর মাধ্যমে ৩৮৮ অংশগ্রহণকারীর কাছ থেকে অনুভূত কৌশল ব্যবহার এর তথ্য সংগ্রহ করা হয় এবং প্রাকটিস আইএলটিএস এর মাধ্যমে তাদের শ্রবণ দক্ষতার ফলাফলও সংগ্রহ করা হয়। ২) থিংক এলাউড প্রোটোকল এর মাধ্যমে বৃহত্তর দলের মধ্যে ৩০ জন অংশগ্রহণকারীর নিকট থেকে কাজ-ভিত্তিক কৌশল ব্যবহার এর তথ্য সংগ্রহ করা হয় এবং তাদের শ্রবণ দক্ষতার তথ্য সংগ্রহ করা হয় তাদের কাজ-ভিত্তিক শ্রবণ দক্ষতা থেকে। পর্যায় ১-এ কোরিলাশনস এবং অ্যানোভা ব্যবহার করে তথ্য বিশ্লেষণ করা হয় এবং পর্যায় ২-এ বিষয়ভিত্তিক বিশ্লেষণের মাধ্যমে (কোরিলেশনস এবং মান-হুইটনি ইউ) এবং থিম ভিত্তিক বিশ্লেষণ পদ্ধতি ব্যবহার করে তথ্য বিশ্লেষণ করা হয়। অনুভূত কৌশল ব্যবহারে উল্লেখযোগ্য ফলাফল না থাকলেও, কাজ-ভিত্তিক কৌশল ব্যবহার সামগ্রিক মেটাকগনিটিভ কৌশল এবং বিভিন্ন স্বতন্ত্র কৌশলগুলির ক্ষেত্রে উল্লেখযোগ্য সম্পর্ক প্রকাশ করে। এছাড়া, কাজ-ভিত্তিক কৌশলের ব্যবহার এলএসএল এবং এমএসএল-এর মধ্যে কৌশলের সুস্থমন্বয় সাধনের পরিসংখ্যানগত উল্লেখযোগ্য এবং তাৎপর্যপূর্ণ পার্থক্য প্রকাশ করেছে। ভবিষ্যৎ গবেষণার পদ্ধতিগত এবং শিক্ষাপদ্ধতিগত বিষয়বস্তুর উপর এই গবেষণাটির প্রভাব রয়েছে: যেমন সমন্বিত ফলাফল থিংক এলাউড টেকনিককে একটি উত্পাদনশীল এবং নির্ভরযোগ্য উপকরণ হিসাবে সমর্থন করে; এবং ইএফএল শ্রোতার (বিশেষ করে এলএসএল) এমএসএল-এর শক্তিশালী কৌশলগত আচরণ থেকে উপকৃত হতে পারে।

**Key words: EFL listening; metacognition in action; perceived vs task-based strategy use; mixed-methods; think aloud protocol**



## Introduction

Despite the critical and integrative role of listening in language acquisition and use (Rost, 2011), listening is often neglected as “the sleeping partner in the business of oral communication” (Vandergrift & Goh, 2012, p. 8). It is traditionally not taught actively (Clement, 2007), rather often assessed in the name of teaching for comprehension (Graham, Santos, & Vanderplank, 2011). Therefore, the L2 listeners still face challenges (Field, 2008). Listening is a complex cognitive skill (Rost, 2011) which L2 learners feel least comfortable with (Graham, 2006) and find it the most difficult skill to learn and to make progress in (Graham & Macaro, 2008). It is, however, learner-oriented instruction that emphasises on listening processes and teaching learners how to listen advocates for strategy use as potential facilitator of L2 listening (Graham & Macaro, 2008; Seo, 2000; Vandergrift & Tafaghodtari, 2010).

Although listening has been neglected over recent decades of strategy research (Wakamoto & Rose, 2021; Zeng & Goh, 2018), existing research on learner-centred, process-oriented teaching of listening has called for a strategy-based approach to listening instruction (see Macaro, Graham, & Vanderplank, 2007; Vandergrift, 2007). This research is, however, carried out in different ways and grounds revealing inconclusive results and various EFL/ESL contexts with different learner levels are yet to be explored (Macaro et al., 2007). Many studies explore strategy knowledge in EFL listening (not strategy use) e.g., several studies have exploited the Metacognitive Awareness Listening Questionnaire (MALQ) (Vandergrift et al., 2006) to explore L2 learners’ strategy knowledge along with their person knowledge. However, strategy knowledge might not always indicate strategy use (Zhang & Goh, 2006). There are several studies that tapped into task-based, on-line strategy use via think aloud protocols and tried to understand the differences between more successful/ effective/ skilled listeners and less successful/ effective/ skilled listeners in different ESL/EFL contexts, although with some inclusive results. Context-specific research on strategy use among different listening ability groups is, however, necessary to see whether there is a difference in their strategy use and treat them accordingly (Zhang, Thomas, & Qin, 2019; Vandergrift, 2003).

Existing literature on strategy use studied either perceived strategy use, e.g., using questionnaire or task-based, real-time strategy use e.g., via think aloud technique. While survey research assays trait listening strategy use, research adopting verbal protocols discovers state listening strategy use (Nix, 2016). Very few studies (e.g., Low & Aryadoust, 2021) explored both perceived strategy use and task-based strategy use using self-reported questionnaire and eye-tracking method while test taking. There is no substantial research that compares participants’ actual strategy use with their self-appraisals and reports of strategy use (Low & Aryadoust, 2021). Researching the correspondence between perceived and task-based strategy use is important to see whether learners’ self-reported awareness of the strategies they think they use is a true reflection of what strategies they actually use in real-time listening (Low & Aryadoust, 2021).

The current study, henceforth, aimed to address the issue. To this end, the study explored the relationship between listening comprehension (measured via an academic IELTS test) and strategy use (in two conditions- off-line, perceived and on-line, task-based, tapped via a questionnaire and think aloud protocols respectively), and the difference between the two listening ability groups of the LSLs and MSLS on their perceived and task-based strategy use. Using explanatory mixed-methods design, this study explored the above among tertiary-level EFL listeners majoring in English in the public universities in an input-poor EFL context of Bangladesh (Aktar, 2020a). The key findings of the study inform learning to listen by putting metacognition into action i.e., strategy use and teaching of it in such EFL contexts.

## Conceptual Framework and Relevant Literature

### Strategy Use as Metacognition in Action

The current study was based on the theory of metacognition, a term coined by Flavell (1979), which can influence learning to listen through metacognitive knowledge and then putting that knowledge into action i.e., by employing strategies needed (Vandergrift & Goh, 2012). Metacognition is “listener awareness of the cognitive processes” (Vandergrift & Goh, 2012, p. 23) and their ability to oversee, regulate, and direct these processes (Goh, 2008). The metacognitive framework proposed by Vandergrift and Goh (2012) draws on three components of metacognition: metacognitive knowledge (knowing), metacognitive experience (sensing), and strategy use (doing) of which metacognitive knowledge and the use of strategies are amenable. Metacognition is in action when learners take immediate action of their awareness of gaps in comprehension such as, orchestrating the use of strategies to bridge the gaps (Vandergrift & Goh, 2012). Strategy use, the regulation of cognition (O’Malley & Chamot, 1990), encompasses three categories of metacognitive, cognitive and socio-affective as classified in O’Malley and Chamot (1990) based on cognitive psychology.

### Studies on Perceived and Task-based Strategy Use in L2 Listening

While a bulk of L2 listening strategy research adds to the existing knowledge, not many studies explored listening strategy use in the metacognitive theory of learning where strategy use is strategy knowledge in action. Also, these studies investigating either perceived or task-based strategy use separately using self-report and verbal data. A few studies explored both perceived and task-based strategy use and tried to see any correspondence between the two.

Unlike numerous studies using the Metacognitive Awareness Listening Questionnaire (MALQ) (Vandergrift et al., 2006) which captures mainly person and strategy knowledge (not strategy use), not many studies have used a variety of other questionnaires to measure off-line strategy use. Among the latter studies, no significant correlation between strategy use and listening was found in Serri, Boroujeni, & Hesabi (2012) with small a sample size (40 Iranian students) and not a valid questionnaire. In contrast, there are studies (e.g., Fujita, 1984; Chao (1996; K k, 2018) who found positive correlations. K k’s (2018) questionnaire was, however, not a validated questionnaire. Fujita (1984) and Chao (1996) validated the questionnaire and used among a larger sample size; however, while Chao’s (1996) recall protocol could inhibit task-based listening performance due to memory load, no details about the listening test items were found in Fujita’s (1984). Furthermore, their Chinese and Japanese EFL contexts are arguably richer than the input-poor EFL context of Bangladesh (see 3.1 below).

A plethora of studies who tapped into task-based, on-line strategy use via think aloud protocols tried to understand the differences between more successful/ effective/ skilled listeners and less successful/ effective/ skilled listeners. Among them, Peter (1999) and Young (1996) could not find any significant differences. While Young’s (1996) students’ self-rated listening proficiency raises validity issues, in Peter (1999) the total strategy use of each proficiency group may be attributable to perhaps just one or two learners (Graham, Santos, & Vanderplank, 2008). Numerous studies, however, revealed positive relationship and significant differences. Earlier studies Murphy (1985) and Henner Stanchina (1987) found effective listeners using more and wider variety of strategies; however, these studies were not able to precisely classify many of the strategies. A major study of on-line strategy use, O’Malley et. al. (1989), revealed significant and in-depth differences between effective and ineffective listeners; however, teachers tagging the students as effective/less effective and small sample of 11 might raise questions of robustness. While a series of investigations were conducted by Vandergrift (e.g., 1997, 1998, 2003) and Goh (1998, 2002). A major study by Vandergrift (2003) found significant differences in metacognitive strategies and in strategy orchestration and Goh revealed more and frequent use of strategies and tactics among the higher ability listeners. However, Vandergrift studied young learners of French and Goh explored an ESL context.

Studies looking into both perceived and task-based strategy use elicited via questionnaire and think aloud protocols are sparse. There are only a few studies (e.g., Low & Aryadoust, 2021) that explored the correspondence between perceived and task-based strategy use. Using questionnaire and eye-tracking measurements of listening strategy use, Low and Aryadoust (2021) revealed that gaze measures predicted participants' final test performance while self-reports had moderate predicting power. The eye-tracking, however, does not tap into the many of the strategies (as classified in strategy research) learners are using, rather it only implies some strategies as indicated in their track of duration, fixation frequency, etc. On oral communications Khan and Voctori (2011) compared strategy use elicited via questionnaire and post-task stimulated recall and found both consistencies (41%) and discrepancies (38%) along with 21% strategies not being confirmed. Therefore, the findings are inconclusive.

As such, further research on the relationship of strategy use and listening comprehension, differences between two listening ability groups of the LSLs and MSLs, and correspondence between perceived and task-based strategy use is called for, using different valid and reliable measurement tools and methods, in different EFL/ESL contexts (Griffiths & Oxford, 2014; Hsiao & Oxford, 2002; Low & Aryadoust, 2021; Macaro et al., 2007; Zhang et al., 2019).

## Research Questions

The current study aimed to explore strategy use in two conditions - off-line, perceived and on-line, task-based, to see its relation to listening comprehension and differences between two listening ability groups in an input-poor EFL context of predominantly monolingual Bangladesh. To this end, two research questions were formulated:

RQ1. Is there any relationship between Bangladeshi tertiary-level EFL learners' strategy use and their listening comprehension?

RQ2. Is there any difference between the less successful listeners and the more successful listeners in their strategy use?

## The Current Study

### Context

The EFL context of Bangladesh is potentially different from other EFL contexts, even within Asia (e.g., China, Taiwan, and Japan), as EFL learners in Bangladesh have significantly less exposure to English listening outside the classroom and on screen, leaving it as an input-poor EFL context (Aktar, 2020a). This EFL context is different due to its unique language history (Banu & Sussex, 2001), limited exposure to English language with far from satisfactory performance of EFL learners (Hamid & Baldauf, 2008), no teaching of listening in compulsory English till grade 12 in state education (Brunfaut & Green, 2017; English in Action, 2009) leading to very poor listening ability (Alam & Sinha, 2009). Despite Bangladeshi EFL listeners' numerous problems: lack of motivation, fear and anxiety (Podder, 2010), difficulty identifying grapheme-phoneme distinction and decoding the spoken language properly (Maniruzzaman, 2006), failing to understand teachers' lectures even in their tertiary levels (Alam & Sinha, 2009), there is a paucity of research on EFL listening in this context (Aktar, 2020a). Only a few studies (e.g., Abedin, Majlish, & Akter, 2009; Alam & Sinha, 2009; Chaudhury, 2011) investigated tertiary level listening of which only Chaudhury (2011) partially looked at EFL listening at a public university context, which is arguably different from private university contexts (Hamid, Jahan, & Islam, 2013). Carried out at a public university context, Aktar (2020a) is on listening problems and Aktar (2020b) is a pilot study on metacognition. The author is not aware of any research systematically devoted to public-university EFL listeners' strategic processing in Bangladesh.

## Research Design

The current study took a pragmatic view of the world in understanding strategy use in EFL listening and collected both quantitative and qualitative data, with a view to increase the strength of the study as well as a more complete analysis of data both quantitatively and qualitatively (Tashakkori & Teddlie, 2003). The research design was conducive to Explanatory Sequential Design with Participant Selection Model (see Figure 1 below), a two-phase mixed methods design (Creswell & Plano Clark, 2007). The purposes are to: provide qualitative evidence that helped explain initial quantitative results; select a subsample of participants for Phase II; give equal emphasis on both the quantitative results of the larger group of participants' perceived strategy use in Phase I and the qualitative results of the task-based, on-line strategy use of a subsample of participants.

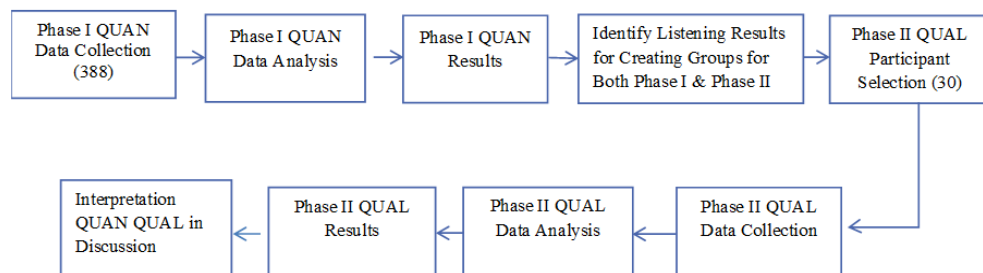


Figure 1. Explanatory Sequential Design.

## Methods for Phase I

### Participants

The participants are the tertiary-level, first-year undergraduate students majoring in English (literature and language) at public universities in Bangladesh. They were homogenous: their age (19-20 years), 12-years of formal English education at state schools and colleges, currently receiving listening instruction as a component of an EFL module. Stratified random sampling was employed to recruit participants from two strata of seven public universities: three big and old established public universities and four comparatively small and newly established public universities, since the student number in English classroom is comparatively bigger in old universities. Thus, data were collected from seven intact classrooms which equals to 395 (202 and 193 from old and new universities respectively). After data cleaning, 388 was the valid sample and among them, there were 336 less successful listeners (LSLs) and 52 more successful listeners (MSLs)<sup>1</sup> based on their listening test scores they took in Phase I.

### Instruments

#### *EFL listening strategy questionnaire*

An 'EFL Listening Strategy Questionnaire' (EFLLSQ) was developed based on mainly two existing strategy taxonomies by O'Malley and Chamot (1990) and Vandergrift (1997). The Cronbach alpha .83 of

<sup>1</sup> In a range of scores obtained (0 to 16), out of 20 discrete marks, a score of 9 was considered cut-off point and students scoring less than 9 (<9) were tagged as LSLs and more than 9 (>9) as MSLs.

all 40 listening strategy items indicates a very good level of internal consistency among the strategy items while the Cronbach alpha .65, .75, and .62 of metacognitive strategy category, cognitive strategy category, and socio-affective strategy category respectively indicate good to acceptable level of international consistency among the sub-scales (Pallant, 2007) (Categories and subcategories in Table 1). As to validity, first, the questionnaire was developed by carefully selecting strategy items from the established and the frequently employed strategy taxonomies in O'Malley and Chamot (1990) and Vandergrift (1997) and by piloting it. Secondly, factor analysis named Principal Component Analysis was conducted on the questionnaire which shows an Eigen value of .760 indicating enough sample size; the Bartlett's test of sphericity ( $p < .001$ ) indicated enough correlations amongst the strategies; the scree plot indicated three possible factors amongst the strategy items.

TABLE 1  
*Categories and Subcategories of the EFLLS Questionnaire*

Metacognitive Strategies	Cognitive Strategies	Socio-affective Strategies
Planning	Inferencing	Questioning for clarification
Directed Attention	Elaboration	Cooperation
Selective attention	Summarization	Lowering anxiety
Self-management	Translation	Self-encouragement
Self-monitoring	Transfer	
Self-evaluation	Repetition	
Problem Identification	Resourcing	
	Grouping	
	Note-taking	
	Deduction/ Induction	
	Substitution	

### ***The listening test***

Sections 3 and 4 (students' discussion on academic affairs and a teacher's lecture respectively, cut by Praat software) of a practice academic IELTS test was chosen to assess students' listening comprehension; IELTS is internationally recognised, valid and reliable and Bangladeshi EFL learners are apparently exposed to academic listening (Alam & Sinha, 2009). Each section contained questions for 10 discrete marks on multiple-choice questions, short answer, fill in the gap, and completing a sentence. The correlation ( $r = .80$ ,  $p < .001$ ) between the test-retest of the listening test in Phase I and think-aloud tasks in Phase II suggested reliability of the tests.

### **Data collection and analysis**

The participants first listened to the recording twice (following feedback during piloting), then they participated in the EFLLSQ reflecting on their listening experience. For RQ1, after initial descriptive statistics, ANOVA tests (one-way repeated measures, mixed between-within subjects), and Pearson Correlations were conducted using SPSS 24 to identify any relationship between learners' listening comprehension and perceived strategy use and group differences (parametric tests due to the larger sample size and data mostly conforming the assumptions, see Pallant, 2007).

## **Methods for Phase II**

### **Participants**

The participants of Phase II of the study comprised 30 students, a subsample from the larger group of participants in Phase I. 30 participants were selected from the larger group based on their listening scores

on the listening test they took in Phase I. As mentioned above, the larger group of participants were divided into two groups - the LSLs and the MSLs. From these two groups, 15 participants from the LSL group and 15 participants from the MSL group were randomly selected as participants for Phase II. In Phase II, the LSLs' scores were in the range of 0 to 7, and the MSLs' scores were in the range of 10-16, making groups with comparable ranges.

## **Instruments**

Think aloud technique is employed to tap into real-time strategy use directly during listening and performing the tasks. Although the technique has its own limitations as to what extent a verbal report can reflect internal reality, till date it is the most productive and reliable methodology (Macaro, Graham, & Vanderplank, 2007; Vandergrift, 2003) which is most likely to yield direct evidence of the cognitive processes (Ericson & Simon, 1993). The think aloud text and tasks were similar to those in the listening test in Phase I.

## **Data collection and analysis**

Think aloud procedure includes - a training session, a warm-up session, and the main data collection session (Ericson & Simon, 1993). Training included practising how to 'think aloud,' while doing some verbal reasoning through analogy, then doing mathematics problems verbally, and finally practising with similar listening text. The next day participants performed think aloud, mainly in Bangla, about what was happening inside their mind while listening and performing associated listening tasks in 25 pre-defined pauses (pauses after each short excerpt of similar length with a natural boundary) by the researcher.

Think aloud protocols were transcribed and analysed using content analysis and thematic analysis- for pattern finding and meaning making. In content analysis, data were coded deductively following the taxonomies of three categories of metacognitive, cognitive and socio-affective strategies by O'Malley and Chamot's (1990) and Vandergrift (1997) from which EFLLSQ has been developed and inductively from the data itself. A friend volunteered to double-code and the inter-coder reliability was 79.76 % (see Miles & Huberman, 1994). Once the coding was done, a profile for each participant was created by tallying and tabulating the frequency of their use of the strategy items and totalling the items into strategy subcategories, thus developing 'Listening Strategy Taxonomy'. For content analysis, non-parametric tests were chosen for violation of assumptions and sample size being small (Pallant, 2007). Further thematic analysis followed Braun and Clarke's (2006) six steps of thematic analysis and there emerged a coding framework 'Inventory of Listening Strategy Orchestration' of three major, interconnected themes, distinguishing the LSLs from the MSLs: combination of strategies and flexibility in strategy use (see Cohen & Wang, 2018; Vandergrift, 2003); interactive top-down and bottom-up use of strategies (see O'Malley et al., 1989); and appropriate and effective use of strategies (see Graham et al., 2008).

## **Results**

### **Perceived Strategy Use**

#### **Descriptive statistics**

Before inferential statistics, descriptive tests revealed a poor listening ability ( $M=4.81$ ,  $SD=3.07$ ) and a moderate use of strategies ( $M=3.46$ ,  $SD=.45$ ) among Bangladeshi EFL listeners (see Table 2). Listening scores also showed a huge difference between the two listening ability groups (an effect size,  $g=3.64$ ; 87% of the participants forming low listening ability group).

TABLE 2  
*Mean of Listening Scores and Perceived Strategy Use*

Participants and listening strategies	All Participants			Less Successful Listeners			More Successful Listeners		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Listening scores	388	4.81	3.07	336	3.88	1.94	52	10.88	1.83
Overall strategies	388	3.46	.45	336	3.45	.46	52	3.47	.38
Metacognitive strategies	388	3.67	.47	336	3.66	.48	52	3.70	.41
Cognitive strategies	388	3.33	.56	336	3.33	.57	52	3.32	.48
Socio-affective strategies	388	3.33	.72	336	3.32	.73	52	3.36	.66

### Relationship between perceived strategy use and listening comprehension

Pearson correlations showed no significant relationship of listening scores with overall strategy use and strategy categories, except with a few individual strategies. After Bonferroni corrections ( $p=.002$ ), only elaboration and translation reach positive and negative significance respectively (Table 3 below).

TABLE 3  
*Correlation between Individual Strategies and Listening Comprehension*

Strategies	Pearson correlation	Listening Scores
Translation	Pearson correlation	-.20**
	Sig. (2-tailed)	.000
	N	386
Elaboration	Pearson correlation	.17**
	Sig. (2-tailed)	.001
	N	-388

\*\*Correlation is significant at the 0.01 level (2-tailed)

\*Correlation is significant at the 0.05 level (2-tailed)

### Difference between the groups in their perceived strategy use

A one-way repeated measures ANOVA was conducted to explore whether there was any difference between participants' use of strategies in metacognitive, cognitive and socio-affective categories (dependent variable was strategy use and independent variable was strategy category with three levels). It revealed a significant effect for strategy category (Table 4): Wilks' Lambda = .68,  $F(2, 386) = 90.28$ ,  $p < .0005$ , multivariate partial eta squared = .32. A partial eta squared suggested a large effect size (Cohen, 1988). Pairwise comparisons also suggested difference between the metacognitive category ( $M=3.67$ ,  $SD=.47$ ) and each of the cognitive ( $M=3.33$ ,  $SD=.56$ ) and socio-affective ( $M=3.33$ ,  $SD=.72$ ) categories (significant at .05 level).

TABLE 4  
*Multivariate Tests for One-Way Repeated Measures ANOVA*

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Strategies	Wilks' Lambda	.681	2.00	386.00	.000	.319

A mixed between-within subjects ANOVA was conducted to see whether this pattern held for both more and less successful listeners where dependent variable is mean strategy use and independent variables are MSL and LSL groups for between subjects ANOVA, and metacognitive, cognitive, and socio-affective strategy categories for within subjects ANOVA. A mixed between-within subjects ANOVA showed no



significant interaction between participants' strategy use and group (Table 5): Wilk's lambda = 1.00,  $F(2, 385) = .26$ ,  $p = .771$ , partial eta squared = .001. There was a substantial main effect for strategy: Wilks lambda = .81,  $F(2, 385) = 45.48$ ,  $p < .0005$ , partial eta squared = .191. The main effect comparing the two groups of listeners was also not significant,  $F(1, 386) = .12$ ,  $p = .725$ , partial eta squared = .000, suggesting no difference in use of strategy categories between the groups.

TABLE 5  
*Multivariate tests for Between-Within Subjects ANOVA*

Effect		Value	<i>F</i>	Hypothesis <i>df</i>	Error <i>df</i>	<i>Sig.</i>	<i>Partial Squared</i>	<i>Eta</i>
Strategies	Pillai's Trace	.191	45.48b	2.00	385.00	.000	.191	
	Wilks' Lambda	.809	45.48b	2.00	385.00	.000	.191	
Strategies * LSLsMSLs ListeningScores	Pillai's Trace	.001	.26b	2.00	385.00	.771	.001	
	Wilks' Lambda	.999	.26b	2.00	385.00	.771	.001	

a. Design: Intercept + LSLsMSLs ListeningScores

Within Subjects Design: Strategies

b. Exact statistic

## Task-based Strategy Use

Task-based strategy use has been analysed using both content analysis and thematic analysis. While content analysis shows both the relationship between the task-based strategy use and listening comprehension and differences between the groups, thematic analysis sheds light on the differences between the groups.

### Content analysis

#### *Descriptive statistics*

Descriptive statistics (Table 6) showed MSLs tend to use task-based strategies more frequently compared to LSLs, particularly metacognitive strategy category.

TABLE 6  
*Median of Task-Based Strategy Use*

	Less Successful Listeners		More Successful Listeners	
	<i>N</i> Valid	Median	<i>N</i> Valid	Median
Overall strategies	15	.85	15	1.06
Metacognitive strategies	15	.73	15	1.20
Cognitive strategies	15	.95	15	.89

#### *Relationship between task-based strategy use and listening comprehension*

Spearman's rho showed a significant correlation between the think aloud task scores and use of metacognitive strategies and several individual strategies in task-based, on-line condition. Table 7 reported the strategies those reached significance even after Bonferroni correction (metacognitive category at  $p = .01$ , and individual strategies at  $p = .001$ ). While monitoring, double-check monitoring and summarisation were positively related, inferencing, linguistic inferencing and reverse question mapping were negatively related.

TABLE 7

*Correlations between Task-Based Strategy Use and Think Aloud Task Scores*

		Think-aloud Task Score	
Spearman's rho	Metacognitive Strategy Category	Correlation Coefficient	.69**
		Sig. (2-tailed)	.000
		N	30
	Monitoring	Correlation Coefficient	.62**
		Sig. (2-tailed)	.000
		N	30
	Inferencing	Correlation Coefficient	-.59**
		Sig. (2-tailed)	.001
		N	30
	Double-check monitoring	Correlation Coefficient	.78**
		Sig. (2-tailed)	.000
		N	30
	Linguistic inferencing	Correlation Coefficient	-.69**
		Sig. (2-tailed)	.000
		N	30
Reverse question mapping	Correlation Coefficient	-.75**	
	Sig. (2-tailed)	.000	
	N	30	
Summarisation	Correlation Coefficient	.67**	
	Sig. (2-tailed)	.000	
	N	30	

\*\*.Correlation is significant at the 0.01 level (2-tailed)

\*.Correlation is significant at the 0.05 level (2-tailed)

***Difference between the groups in their task-based strategy use***

Mann Whitney U tests showed a significant difference between the two groups in their use of overall strategies and metacognitive strategies (Table 8). However, Bonferroni correction ( $p=.01$ ) revealed that metacognitive strategy use by the MSL group only was significantly higher. After Bonferroni, use of monitoring, double-check monitoring, and questioning elaboration were significantly higher among the MSLs, and use of inferencing and linguistic inferencing were higher among the LSLs.

TABLE 8

*Group Differences in Strategy Use in Mann Whitney U tests*

	Overall strategy	Metacognitive	Cognitive
Mann-Whitney U	58.00	29.50	104.00
Wilcoxon W	178.00	149.50	224.00
Z	-2.27	-3.45	-.35
Asymp. Sig. (2-tailed)	.023	.001	.723
Exact Sig. [2*(1-tailed Sig.)]	.023b	.000b	.744b

Note. Grouping Variable: Less Successful Listeners and More Successful Listeners. Not corrected for ties.

## Thematic analysis

### *Orchestration of task-based strategy use distinguishing the groups*

Thematic analysis generated three distinct themes distinguishing the MSLs from the LSLs in the way they orchestrated and coordinated strategies; these are, however, often inter-connected and dependent on each other to work effectively, see Figure 2 below.



Figure 2. Three themes in strategy orchestration.

### *Combination of strategies and flexibility in strategy use*

The MSLs were more adept at combining different strategies in comprehending the text or at performing the task at hand. Their combinations of strategies differed in terms of frequency, variety, and flexibility.

#### *Frequency*

It seems that all MSLs and LSLs used multiple strategies together at some point or other. However, the frequency of combinations by the MSLs (75 times) was almost twice that of their counterparts (41 times). Amongst the LSLs, the frequency of combining for a single participant ranged from 1 to 4 times, whereas amongst the MSLs it was 2 to 10 times.

#### *Varieties of strategy types*

The MSLs' combinations of strategies were also wide ranging and in different fashions. They combined strategies in three different fashions - combinations of metacognitive strategies only, cognitive strategies only, and metacognitive and cognitive strategies together. Their pattern exhibited frequent combining of both metacognitive and cognitive strategies (40%) than combining metacognitive strategies (31%) and cognitive strategies (29%) alone. Conversely, the LSLs' pattern of combinations suggested combinations of cognitive strategies (66%) more frequently than others (metacognitive only 7%, metacognitive and cognitive together 27%). This pattern- greater use of cognitive strategies by LSLs and metacognitive strategies by MSLs corroborates findings in content analysis.

#### *Flexibility*

The MSLs exhibited more flexibility in their coordination of strategies; whenever they faced any problem with the initial strategy chosen, they judiciously moved forward and chose next potential strategy until reached a conclusion or solution. For example, Nahid, a MSL, switched between different strategies as required by the task:

*Ok, this short passage starts with Melanie and it suggests that she has an infection. So I thought the whole passage is going to deal with diseases and medicine. But suddenly I see (hear) that she is supposed to write something about housing trends. So the topic certainly changes...I need to be more attentive. (planning, monitoring, and directed attention).*

### ***Interactive top-down and bottom-up use of strategies***

The MSLs showed more interactive approach to listening comprehension, whereas the LSLs' approach seems to be complicated. The LSLs showed their frequent preferences to a bottom-up translation and a top-down inferencing often separately but not interactively or effectively. MSLs attended to the incoming text interactively and processed it at a sentential or global level using co-text, and finally mapping the textual information with their prior knowledge using wider context. Fara, a MSL, reported how she solved a problem by interactive top-down and bottom-up processing:

*At first, I was just trying to indicate a time. In doing so I found it said 'weekend' as the last date of submission, and I wrote down that as the answer to the question. Then I realised that the question was when Simon would start writing his essay. Then I corrected the answer ('tomorrow').*

For same listening text, a LSL Naila's process of this revealed how she reported a few words she could identify. She was thinking aloud:

*A man came and said 'good morning', and then he asked what was happening there. I could hear a word 'weekend' said by the man. I was trying to match other words with questions. Was trying to find out the answer, but I didn't find any answer. Their pronunciation wasn't clear to me.*

This excerpt reveals her concentration on translating on word level; she tried to match the heard words with any printed questions by using 'reverse question mapping' strategy (a new strategy emerged from mostly the LSLs' approach to the text) but in vain. Often, the LSLs found they were behind the recording as their translation on a word-by-word basis consumed time. As seen above, translation, reverse question mapping, and inferencing reached negative correlation.

### ***Appropriate and effective use of strategies***

The protocols further revealed LSLs' inappropriate and ineffective use of strategies, particularly in the use of planning, maintaining attention, monitoring, inferencing, and elaboration strategies. However, reasons behind their failure in using these strategies effectively can be myriad, including lack of sufficient linguistic knowledge.

#### ***Planning***

Although both the groups employed planning strategies, LSLs would mostly predict what might come next from their reading of the question paper or the instructions but the MSLs tended to predict what next and offered strategies to handle the upcoming text by also setting goals:

Sultana, a LSL, “was thinking... it’s said here to read the questions in section 2. So, I was reading questions 11 to 20- what was written here and what could be the answer.” On the other hand, Hasib, a MSL reported:

*I need to see what is coming. And yes, the lecture would be useful for... um... I should understand from the first line (of the question paper) that it is about a lecture. There are several questions regarding... lecture (advanced organising). Then I have to be attentive to the advantages and disadvantages of a thing; there are two things for each (item) and in each case, one is given and another is blank; e.g., for email there is a blank under advantage and in telephone there is a blank under disadvantage. I must be careful that I do understand and don’t miss it (organisational planning).*

### *Maintaining attention*

Despite frequent mentions by both groups, directed attention was used by the MSLs successfully. The LSLs often seemed to lose their attention and easily and it was hard for them to get back on track. They often switched between the audio and the question paper to find a match between them but often ended up lost. Conversely, the MSLs seemed to better maintain their attention throughout the time and could manage to redirect their attention when a break in concentration faced.

Again Naila, a LSL, lost her concentration just after a few minutes into the second section of the text and until the end she struggled to find out where she was: “mm...talking about offices...my concentration was broken, and I was looking outside...I could only understand the word ‘office;’ I couldn’t find any answer.” She seemed to miss the conceptual framework of the research lecture. In contrast, MSL Zisan reported that “...I was thinking about the previous one, that’s why I missed this one” but using short term memory, he rightly found out the answer ‘stack system’:

*Um...Jennifer helps her publication ... library. um...heard the word ‘magazine’ to help her analysis. Publication, library, stacks system, I heard these words. Now if they have talked about library stacks, that library has lots of stacks, then I would probably use the word ‘stack.’*

### *Monitoring*

Monitoring comprehension was often coupled with inferencing strategy. However, the LSLs’ use of it often seemed to fail to generate meaning. Mahbub, a LSL, reported:

*How much I understood, I got it right, as I understood ‘library,’ and ‘supermarket’ completely. I was trying to understand against the question asked by the speaker, ‘if she had any free time and what she does in her free time?’ I was trying to understand the next part matching this question.*

He was trying to check his comprehension based on his hearing of two words only. He too seemed to miss developing a conceptual framework for the speakers’ discussion on writing an essay, thus guessed wildly.

In contrast, MSL Hasib, once confused, was checking his understanding of the question itself-what he was supposed to do and what Simon was supposed to do (*monitoring comprehension*) and tried to be more specific to understand what was required to do (*problem identification*) with “careful attention.” He reported:

*...this time I didn’t want to make the same mistake of failing to identify the question’s inquiry. Since Jennifer was asked about ‘what,’ and what I need to do, I need to differentiate between the questions -what question is what.*

### *Inferencing*

The LSLs used this strategy unsuccessfully as based on wild guess, a few words heard and processed locally, and probably due to their inappropriate use of prior knowledge, as is seen in Mahbub while monitoring. Like him, many of the LSLs associated the idea of sample size and population with problems of a large population in Bangladesh. Many of the LSLs seemed to be weak at decoding and thus taking frequent refuge in inferencing; capitalising on insufficient words decoded often led to incorrect inferencing.

Conversely, the MSLs' use of inferencing was judicious and coupled with problem identification, monitoring etc. Shahim was successful in inferencing as he built on the conceptual framework he developed at the beginning:

*The answer for Question 6 has been given. It's said here that Jennifer found some publication in the library...she probably said the publication is about UK supermarkets, and this publication from the library helped her. That's it. From this I guess that she got some publication about UK supermarkets which helped her in analysis.*

### *Elaboration*

The MSLs elaborated more frequently; however, the LSLs' elaboration was sometimes creative. While translating words like 'information,' 'require,' 'develop,' and 'industry,' Mahbub, a LSL, was trying to elaborate on his ideas based on his general knowledge of the development of society. He seemed to use world elaboration ineffectively, and which was restricted by the few words he could translate. He was not sure about the concept developed in the listening text indicating lack of sufficient linguistic knowledge to capitalise on.

## **Discussion**

As the study employs a two-phase mixed-methods design for a more complete analysis and understanding of listeners' strategy use, key results from both Phase I and Phase II were triangulated in discussions. Triangulations of the findings revealed anomaly between perceived and task-based strategy use. While perceived strategy use was not significantly correlated with listening performance (except for individual strategies of elaboration and translation), task-based, actual strategy use was (for overall metacognitive strategy category and several individual strategies). Task-based strategy use also reveals significant as well as in-depth differences between the two listening ability groups. Thematic analysis of the protocols also reinforced the significant findings in the content analysis of task-based strategy use. Triangulations of findings therefore advocated for task-based, on-line strategy use as more reliable and actual since it is in real-time; hence, think aloud technique is a more productive, accurate and suitable tool for gaining insights into the mental processes of on-line strategy use (Vandergrift, 2003) provided care is taken in its implementation and analysis (Graham et al., 2008). The triangulated findings addressing RQ1 and RQ2 have been discussed below, with some cross-reference to one another in order to interpret the findings.

### **Relationship between Strategy Use and Listening Comprehension**

The non-significant relationship between perceived strategy use and listening comprehension is congruent with Serri et al. (2012) but incongruent with Chao (1996), Liu (2008) and K ok (2018). There could be four possible interpretations of the non-significance in perceived, off-line condition. First, questionnaire by nature might drive the learners to answer favourably (Imhof, 1998). Second, there could be lack of sensitivity of the questionnaire in tapping into strategy use; the students were not readily aware

of the strategies they use. This could be even true if Bangladeshi EFL learners were not much aware of strategies at their disposal. Low and Aryadoust (2021) also revealed that task-based strategy use (measured via eye-tracking) predicted students' final listening performance and suggested that self-report strategy data did not accurately portray the task-based listening processes taking place- the findings partially supported by Khan and Victory (2011). These interpretations have research implication while tapping into listeners' strategy use which is real-time and a highly mental activity (Low & Aryadoust, 2021; Vandergrift, 2003). Third, frequent use of strategies might not sometimes accompany better listening. However, the role of frequent use of strategies cannot be dismissed altogether, since this study revealed a significant, positive correlation in task-based, on-line strategy use. Fourth, there might be a floor effect as the listening test seems to be challenging for this population of participants and the majority (87%) scored at the bottom of the scale. Three possible reasons behind students' overall poor performance in listening could be: the very input-poor context of Bangladesh; late exposure to listening in comparison to reading and writing in English education; and testing listening in the name of teaching. It seems to be a common scenario in Asian contexts that English education focuses more on reading and writing skills, neglecting the listening skill (Aktar, 2020a; Sadatmir, et. al. 2022).

The findings of task-based, real-time strategy use, however, offered a) a significant positive relationship between metacognitive strategy use and listening comprehension as also seen in Goh (1998), b) a significant relationship between several the individual strategies (in cognitive and metacognitive) and listening comprehension as in Goh (1998), and c) both significant and in-depth qualitative differences between two listening ability groups as in O'Malley et al. (1989) and Vandergrift (2003), as discussed below. These findings of the task-based strategy use were more convincing than those of the perceived, off-line strategy use, as: a) triangulation of content and thematic analyses of the on-line strategy use were congruent; moreover, thematic analysis offered further in-depth differences on how strategies were orchestrated and co-ordinated; b) task-based, on-line strategy use reflected listeners' actual strategy use so far as they were reported real-time of performing the task; therefore, more context-specific. Hence it is argued that there is a significant, positive relationship between EFL listening and metacognitive strategies particularly, as also found in Cross and Vandergrift (2018). The positive link, although not showing the direction, lends support to the existing intervention studies revealing strategy use influencing listening (Graham & Macaro, 2008; Kobayashi, 2018; Seo, 2000; Vandergrift & Tafaghodtari, 2010).

## **Difference between the Less and the More Successful Listeners**

While non-significant difference between the two listening ability groups found in their perceived strategy use supports Serri et al., (2012), significant difference between two groups' metacognitive strategy use in task-based strategy use lends support to Murphy (1985), Vandergrift (2003, 1998, 1997), and Henner Stanchina (1987). As to significant use of individual strategies (of monitoring, elaboration and summarisation), significant difference in monitoring supports Henner Stanchina (1987), O'Malley et al. (1989), and Vandergrift (1997, 2003), and in elaboration supports Henner Stanchina (1987), O'Malley et al. (1989) and Vandergrift (2003). These suggest that the MSLs frequently monitored and double-checked their comprehension while also elaborated on what they listened by using their personal and world experience etc. and checked their elaboration by questioning their comprehension, and they often summarised what they heard to comprehend overall meaning.

Negative correlation of a few individual strategies (of reverse question mapping, inferencing, linguistic inferencing in task-based strategy use, and of translation strategy in perceived strategy use) indicates LSLs' frequent use of them. LSLs' translation from word to word consumes their time they could use for metacognitive interpretation of the text; as such they were mainly doing surface level processing of text. Contrary to effective listeners' interactive approach to segmenting and parsing chunks of spoken text, the LSL group is prone to bottom-up processing at the word-to-word level (O'Malley et al., 1989). As they could not parse the streams of words they heard and sent them to their long-term memory for utilisation, this creates a cognitive load in their short-term memory, consequently the words begin to fade away from

their memory to make space for new incoming input. As such, they tended to forget what they had heard, also reported in Goh (2000). Reverse question mapping, a new, bottom-up strategy, was almost uniquely used by LSLs when they failed to find a correspondence between printed the question and recording or failed to fully understand the questions or just picked something randomly.

The LSLs' preference for inferencing is surprisingly incongruent with some of the existing studies such as O'Malley et al. (1989), and Smidt and Hegelheimer (2004). Here LSLs' more frequent but ineffective use of inferencing strategy may stem from their insufficient information decoded, as indicated by the thematic analysis of their protocols. Thematic analysis of the protocols also revealed the LSLs' inappropriate use of e.g., planning, maintaining attention, monitoring, inferencing, summarisation, and elaboration strategies which made them less successful in their use of strategies hence in listening comprehension, idea also supported by Goh (2002, 1998).

Thematic analysis of the task-based strategy use reinforces the differences between the groups in their strategy use revealed in content analysis, as also seen in Vandergrift (2003), by uncovering the way they coordinate or orchestrate different strategies while performing listening tasks: combination of strategies and flexibility in strategy use (Cohen & Wang, 2018; Vandergrift, 2003); interactive top-down and bottom-up use of strategies (O'Malley et al., 1989); and appropriate and effective use of strategies (Graham et al., 2008). MSLS' flexibility in strategy use is congruent with Murphy (1985), Vandergrift (2003), and Graham et al., (2008). MSLS' combining both metacognitive and cognitive strategies more frequently towards a greater understanding of the text is called a 'cluster of strategies' by Graham et al. (2010), and Graham and Macaro (2008), an 'orchestration of strategies' by Vandergrift (2003), and "links in a fence or the molecular units that bond together to form the double helix of a molecule of DNA" by Murphy (1985, p.38). O'Malley et al. (1989) also revealed effective listeners' combining of, for example, elaboration and monitoring, inferencing strategies. The MSLS exhibited an interactive approach to meaning making and their flexibility in strategy use was seen in bottom-up and top-down approaches to text processing (also seen in Vandergrift & Tafaghodtari, 2010). Their use of strategies was thus purposeful, goal-oriented (O'Malley et al., 1989), and more dynamic (Vandergrift, 2003).

Together, the findings reveal that there is a significant and positive relationship between listening comprehension and use of metacognitive strategies and several individual strategies, and significant and in-depth differences between the LSLs and the MSLS in their orchestration of strategies, given that a more effective and reliable strategy elicitation tool is employed to tap into the highly mental processes of listening strategy use.

It is, however, recommended that the link between strategy use and listening performance needs to be interpreted with caution. Whether linguistic knowledge may affect learners' listening performance and use of strategies has not been measured in this study. Lack of a threshold level of linguistic knowledge may explain the LSL' less frequent and unsuccessful use of some strategies (see Goh, 1998; Field, 2008; Renandya, 2012). While the MSLS' more automaticity may provide with an attentional space to think beyond the word level and use of strategies, some strategies are probably available and effective once a certain level of input is decoded to capitalise on (see Graham et al., 2010). This also has implication for strategy research and intervention.

## Conclusion

Conceptualised in the metacognitive framework of learning, this empirical study provides an in-depth understanding of the trajectories of listening strategy use in the input-poor EFL context of Bangladesh (Aktar, 2020a). The study explored what and how strategies were used by the learners, not how much they were aware of the strategies as this knowledge might not always guarantee their use (Zhang & Goh, 2006). The study has significant contributions to existing knowledge about L2 listening strategy use and has implications for both research and pedagogy. Methodologically, triangulation of data via questionnaire and think aloud technique advocates for think aloud technique as the more productive and suitable strategy data



collection tool to tap into task-based, on-line, actual strategy use. Pedagogically, insights into strategy use and differences between two groups from an input-poor EFL context can inform teaching and learning how to listen in similar contexts in Asia and beyond.

Learners and teachers can be aware of the significant as well as successful use of strategies. Teachers and educators can think of incorporating strategies particularly metacognitive strategies and several metacognitive and cognitive strategies like monitoring, double-check monitoring, elaboration and summarisation more, being mindful to learner differences. Alongside frequent use, strategies need to be orchestrated in different fashions for them being successful. First, combining strategies and being flexible in switching to next potential strategy may work better. Second, strategies need to be used interactively by combining both top-down and bottom-up strategies while processing the spoken text. Third, choice and use of strategies (e.g., maintaining attention, monitoring, inferencing) need to be appropriate and effective, for which, however, further intervention in e.g., linguistic knowledge (for threshold level) might be required to benefit most from strategy use (see Graham et al., 2010). Deliberate practice of listening will work best when listeners are equipped with how to listen- a training in the strategies to 'drive a car' (Field, 2008), as listeners in different input-poor EFL contexts in Asia (including Bangladesh, Japan, and China) struggle to comprehend input in university English classrooms and seminars (see Aktar, 2020a; Milliner & Dimoski, 2019; Zhang, 2008).

Both listening ability groups can benefit from the strategic repertoire and orchestration of the MSLs. While the LSLs can benefit most from this (as is seen in Kobayashi, 2018), the MSLs can also find the collective behaviour of 15 MSLs useful. This collective strategic behaviour as a model can inform strategy intervention which could facilitate the learning process and promote learner agency, self-regulation and learner autonomy (Graham & Macaro, 2008; Kobayashi, 2018; Oxford, 2016; Thomas & Rose, 2018; Vandergrift & Goh, 2012). Peer collaboration in facilitating learning to listen between and within the LSLs and MSLs can also be encouraged. As such, strategy instruction can be recommended in learner-centred curriculum and training on it in teacher education.

A key limitation of this study is not measuring students' linguistic proficiency; therefore, further research can measure as well as control this confounding variable to understand the relationship better. Strategy use in this study is specific to IELTS test particularly; therefore, it should not be prescriptive to other listening experiences, without further research. Further validation of the questionnaire can be ensured e.g., via testing structural equation modelling. Future research can also investigate strategy use by triangulating other methods e.g., eye tracking and journal keeping minimising the potential pitfall of think-aloud technique. Exploring task-based strategy use can be among a larger sample, for more robust findings from content analysis particularly (despite 30 being sufficient for statistic tests). However, positive relationship between listening comprehension and particularly metacognitive strategy use, and differences between the two listening ability groups call for intervention studies to see causal relationship and impact of treatment on different groups. It is also recommended that the study be replicated in other EFL/ESL and cultural contexts, including at primary and secondary levels.

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