Exploring the Relationship between Metacognitive Awareness and Listening Performance with Questionnaire Data

Abstract
This study sought to provide a nuanced understanding of the relationship between metacognitive awareness and listening performance by eliciting from 113 ESL Chinese learners their metacognitive awareness with regard to knowledge of listening strategies used and perceptions of difficulty and anxiety following a listening lesson. Data were collected through the Metacognitive Awareness Listening Questionnaire (Vandergrift, Goh, Mareschal, & Tafaghodtari, 2006) and an official sample IELTS listening test. Responses were examined for how different aspects of metacognitive awareness represented by the MALQ factors related to listening performances and for individual differences in metacognitive awareness across these factors. The results showed a significant positive relationship between learners’ metacognitive awareness scores and listening performance and that their metacognitive awareness accounted for 22% of the variance in listening performance. Analysis of individual factors showed a significant relationship between listening performance and the strategies of directed attention and problem solving as well as an overall moderate to low sense of confidence amongst the participants in the study. It also revealed considerable intrapersonal variation in different aspects of metacognitive awareness. The paper discusses the results as well as the use of the questionnaire as an instrument for eliciting and interpreting learners’ metacognitive awareness about listening.

Introduction
Metacognition has been widely recognised to have an important role in a child’s cognitive development (Flavell, Miller, & Miller, 1993), academic learning (Alexander, 2008; Borkowski, 1996), and language development (Victori & Lockhart, 1995; Wenden, 1991). It is also a powerful predictor of learning, accounting for approximately 17% of variance in learning, compared to 10% that is accounted for by intelligence (Veenman, Van Hout-Wolters, & Afflerbach, 2006). This high percentage of variance that is linked to metacognition further suggests that some of students’ limitations in learning may be partly compensated for by metacognition. In spite of the importance of metacognition for learning, its manifestation as a construct in second language (L2) listening has only been examined in recent years (see e.g. Cross, 2010; Goh, 1997; Mareschal, 2007; Vandergrift & Tafaghodtari, 2010). There is also a growing number of studies that provided empirical support for the efficacy of instruction that raises learners’ awareness of the listening process through strategy training and process-oriented reflections (Cross, 2011a; Graham & Macaro, 2008; Liu & Goh, 2006; Vandergrift & Tafaghodtari, 2010; Zeng, 2012).

The focus on the theoretical conception of listeners’ metacognitive awareness has also influenced recent principles for learner-centred listening instruction, shifting the focus from predominantly strategy training (Mendelsohn, 1995) to a comprehensive metacognitive approach that addresses not only strategies but also the development of learners’ metacognitive knowledge of themselves as L2 listeners and the mental and social processes of listening (Goh, 2008; Vandergrift & Goh, 2012). As focus on metacognitive awareness is a relatively new endeavour in research and teaching of L2 listening, there is a need to research the relationship between the two constructs further in order to evaluate the theoretical bases for such a focus.

This study was planned therefore with the broad aims of investigating this relationship, but particularly on the impact different aspects of metacognitive awareness may have on listening
It was conducted in the context of an ESL programme for a group of adolescent learners from China studying in a tertiary institution in Singapore where English is the medium of instruction and social interaction. The Metacognitive Awareness Listening Questionnaire, or MALQ for short, (Vandergrift et al., 2006) was used to uncover the learners’ knowledge of their use of listening strategies and perceptions of themselves as L2 listeners.

Using MALQ, a validated instrument for eliciting learners’ self-reports, would draw on the strength of statistical inferences to offer further insights into patterns of metacognitive awareness reported in qualitative studies. Although some studies have used the MALQ for similar purposes, this study would provide a more nuanced understanding of the relationship between metacognitive awareness and L2 listening as well as variations in metacognitive awareness within individual learners. To our knowledge, a focus on the intra-personal differences in metacognitive awareness as they relate to listening performance is the first of its kind.

Conception of Metacognitive Awareness

To review the construct of metacognitive awareness investigated in this study, we need to review the concept of metacognition, a term first coined by psychologist, John Flavell (1976). According to Flavell, metacognition is “one’s knowledge concerning one’s own cognitive processes and products or anything related to them,” and the capacity for “active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in the service of some concrete goal or objective” (p.232). It also includes momentary feelings of difficulty during a task. Metacognition, therefore, has two important components: knowledge about cognition and control of cognition, thus encompassing the dimensions of knowing and doing. Attempts at refining the concept of metacognition have since been made, but researchers continue to recognise the fundamental conceptualisation of the construct that was articulated by Flavell (1979) and complemented by Brown’s (1978) work on the executive function of cognition (see Paris & Winograd, 1990; Veenman et al., 2006, for further discussions).

Knowledge about cognition — better known as metacognitive knowledge — refers to “that segment of your (a child’s, an adult’s) stored world knowledge that has to do with people as cognitive creatures and with their diverse cognitive tasks, goals, actions, and experiences,” and “consists primarily of knowledge and beliefs about what factors or variables act and interact in what ways to affect the course and outcome of cognitive enterprises” (Flavell, 1979, pp. 906–907). Flavell identified three types of metacognitive knowledge: person, task, and strategy knowledge. Person knowledge refers to knowledge about oneself as a learner. It includes knowing how one reacts to a learning situation, the challenges that one faces, and one’s feelings of anxiety or confidence. In general, an expression of person knowledge could potentially offer insights into the individual’s confidence and beliefs regarding his or her learning. Task knowledge is knowledge about the nature and demand of a learning task, and it enables an individual to consider internal and external factors that may contribute to the difficulty of a task. Strategy knowledge refers to knowledge about the strategies that one uses or can use to achieve learning goals. It also includes knowledge about ways of learning that may not help in achieving a learning goal. Metacognition enables learners to understand the processes involved in reaching a learning goal and gives them a sense of personal agency (Bandura, 2001), thus helping learners to develop positive self-concept and motivating them
A metacognitive framework for L2 listening

Drawing on Flavell’s (1979) conception of metacognition, Vandergrift and Goh (2012) proposed a metacognitive framework for L2 listening and posited that the latent features of metacognition are manifested in three ways: metacognitive experience, metacognitive knowledge, and strategy use. They applied the term ‘metacognitive awareness’ to refer broadly to these manifestations revealing a person’s consciousness of personal thoughts and conscious actions. Metacognitive experience is a thought or feeling about thinking and learning. Unless an individual acts on this thought or feeling, metacognitive experience may not contribute to the positive effects that researchers have observed about metacognition. Following Flavell (1979), Vandergrift and Goh asserted that a key dimension of an individual’s metacognitive awareness is metacognitive knowledge, which is a form of declarative or stored knowledge about learning to listen that can be elicited through the use of appropriate prompts and developed. It is crucial to the learning process as metacognitive knowledge can influence the way an individual plans, manages and directs his/her own learning.

Another important dimension of metacognitive awareness in this framework is the use of strategies or special techniques which can facilitate listening comprehension and help learners cope with listening difficulties (O’Malley & Chamot, 1990; Oxford, 1990). Strategy use is a conscious process involving recognition of a problem and attempts at solving it through the use of special facilitating actions, and requires conscious application of strategy knowledge. Listening strategies have been broadly categorized as cognitive, metacognitive and social-affective based on their functions and the type of mental, social and affective processes involved (e.g. Cross, 2009; Goh, 1998; Gu, Hu, & Zhang, 2009; O’Malley, Chamot & Küpper, 1989; Vandergrift, 1997; Young, 1996). Cognitive strategies are used to manipulate listening input directly in order to arrive at meanings of words and interpretations of a message while metacognitive strategies are used to manage these cognitive processes by influencing their operations through processes of planning, monitoring, problem solving, and evaluation. Social interactional strategies involve getting the help and input of other participants in an interaction while affective strategies are needed to help learners manage some debilitating emotions such as nervousness and anxiety (Elkhafaifi, 2005; Vogely, 1999).

Research on Metacognitive Awareness and L2 Listening

The past two decades have seen growing research interest in L2 listeners’ metacognitive awareness. Research on strategy use has focused mainly on examining learners’ verbal reports to elicit the strategies they use, and to a lesser extent on analysing learners’ recall notes and answers to comprehension questions. For example, Gu et al. (2009) elicited verbal protocols from 18 primary school students in Singapore to identify differences in the listening strategies used by good and poor listeners. They found that good listeners consciously used their existing real world and linguistic knowledge to reconstruct, interpret, and summarize their understanding, as well as making inferences and predictions to understand listening input. The weaker ones, on the other hand, expended a lot of energy on decoding without giving much time to monitoring their understanding.

The observation that weak listeners focused on decoding was also made by Osada (2001) in a study of Japanese university language learners. Graham, Santos, and Vanderplank (2008) also found that weak listeners were misled by words they had predicted before a listening activity
and did not evaluate their comprehension using their contextual knowledge. Other studies on strategy use also found that that better listeners used a wider range of appropriate strategies (see Chen, 2009; Chien & Wei, 1998; Goh, 1998; O’Malley, Chamot, & Küpper, 1989; Young, 1996; Vandergrift, 1997; Vogely, 1995) and in an orchestrated manner (Goh, 2002; Vandergrift, 2003b). Macaro, Graham, and Vanderplank (2007) advised caution in claiming a correlation between strategy use and listening success because of their concern that different measurements of listening proficiency had been used. They recommended control for linguistic knowledge (i.e., grammar and vocabulary) so as to get further insights into this as well as the direction of causality. Nevertheless, they concluded that their extensive review of listening strategy research showed that more successful listeners did use different strategies.

Research that examined L2 learners’ introspection of their learning has shown that learners possess explicit and implicit metacognitive knowledge about the listening process and themselves as L2 listeners (Cross 2010; Goh, 1997; Graham, 2006; Vandergrift, 2003a, Zhang & Goh, 2006). Variations, however, have been observed among learners, as knowledge about one’s own learning and use of strategies can be influenced by factors such as sociocultural practice (Cross, 2011b), age (Goh & Taib, 2006), motivation (Vandergrift, 2005), exposure to process-based instruction (Vandergrift & Tafaghodtari, 2010), nature of peer dialogues (Cross, 2010), and listening ability (Goh, 1999). Goh (1999) reported that low-ability listeners were generally less aware of strategies that could facilitate listening comprehension and of how factors such as speakers’ characteristics might affect their listening. Her findings were based on an analysis of the listening diaries of a group of Chinese ESL learners.

The Metacognitive Awareness Listening Questionnaire (MALQ)

Several recent studies investigating metacognitive awareness about listening have made use of the MALQ as an instrument for eliciting learners’ knowledge about strategy use and the demands from listening (Baleghizadeh & Rahimi, 2011; Bozorgian, 2012; Mareschal, 2007; O’Bryan & Hegelheimer, 2009; Rahimi & Katal, 2012; Zeng, 2012). According to its developers, the MALQ was grounded in research and theory about L2 listening, most significantly the findings of research on strategy use and metacognitive knowledge based on Flavell’s (1979) conception of metacognition (see Vandergrift et al., 2006, for the development and validation of the questionnaire). Following an exploratory and a confirmatory factor analysis during the validation process, 21 randomly-ordered items related to five distinct factors emerged: directed attention, mental translation, planning and evaluation, problem solving, and person knowledge.

The first four factors measure metacognitive knowledge of strategic behaviours related to the regulation of the listening process while the fifth measures learners’ person knowledge. Directed attention strategies are needed to focus attention on the task; mental translation strategies help learners translate what they hear into their first language; planning and evaluation strategies assist listeners to plan and prepare for listening, as well as evaluating their performance after listening; and problem solving strategies enable learners to make inferences when they are unable to hear or understand a certain word. Person knowledge reveals what learners know about themselves as L2 listeners, particularly in terms of their confidence.

In addition to validating the questionnaire, Vandergrift et al. (2006) also found a moderately significant correlation between listening comprehension ability and the overall MALQ scores of the 966 respondents. They reported that 13% of the variance in listening performance
could be explained by learners’ metacognitive awareness. Zeng (2012) also reported a significant relationship between metacognitive awareness and listening test performance among 1044 EFL learners in China. He found that 15% of the variance in the learners’ listening performance could be explained by their reported metacognitive knowledge in listening through the MALQ. The results that have emerged thus far are consistent with the findings in other disciplines concerning the importance of metacognition in learning.

Although few in numbers, these MALQ studies have provided noteworthy insights into the relationship between metacognitive awareness and listening performance. There is a lack of attention, however, to how different types of metacognitive knowledge represented by the MALQ factors relate to the learners listening success. In addition, no study has as yet examined intra-individual differences in metacognitive awareness about L2 listening across these factors. The present study sought to provide insights into these facets of the relationship between metacognitive awareness and listening performance through the following research questions:

1. Is there a relationship between learners’ metacognitive awareness of L2 listening and their L2 listening performance?
2. How do the various aspects of the learners’ metacognitive awareness as measured by each of the five MALQ subscales (directed attention, mental translation, person knowledge, planning and evaluation, and problem solving) relate to L2 listening performance?
3. Are there significant intrapersonal differences among the different aspects of metacognitive awareness of L2 listening?

The Study

Participants
A total of 113 (male = 40; female = 73) Chinese ESL learners participated in this study. Ranging in age between 18 and 20 years, these participants were attending a 6-month, full-time English communication skills program at a university in Singapore. They had completed their secondary school education in the People’s Republic of China and had been admitted into the university soon after. As part of their formal education in China, they had studied English for a minimum of six years in junior and senior secondary school. At the time of data collection, they were close to completion of the aforementioned intensive program, which was aimed at improving their English proficiency for their English-medium undergraduate studies at the university.

Table 1 MALQ Subscales and Items

<table>
<thead>
<tr>
<th>MALQ subscales</th>
<th>MALQ items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directed attention</td>
<td>2, 6, 12, 16</td>
</tr>
<tr>
<td>Mental translation</td>
<td>4, 11, 18</td>
</tr>
<tr>
<td>Planning &amp; evaluation</td>
<td>1, 10, 14, 20, 21</td>
</tr>
<tr>
<td>Problem solving</td>
<td>5, 7, 9, 13, 17, 19</td>
</tr>
<tr>
<td>Person knowledge</td>
<td>3, 8, 15</td>
</tr>
</tbody>
</table>
Instruments

Listening questionnaire

The MALQ was used in this study to assess the participants’ metacognitive awareness concerning their perceived use of strategies while listening to oral texts. It also elicited some information on their person knowledge with regard to confidence. The questionnaire invites learners to respond to statements describing some strategies for listening comprehension and their perceptions about themselves as learners learning to listen in another language, thus revealing their metacognitive knowledge (see Appendix A). The MALQ authors recommended that the MALQ be completed after learners have engaged in an authentic listening task, “so that [they] would have a specific task on which to base their responses” (Vandergrift et al., 2006, p. 441). Given the context-sensitive and task-embedded nature of listening strategy use (Graham & Macaro, 2008; Vandergrift, 2003b), this task-questionnaire combination was expected to anchor and facilitate the respondents’ self-reporting of metacognitive awareness about L2 listening.

Responses to the MALQ are selected from a six-point Likert scale indicating agreement (1 = strongly disagree, 2 = disagree, 3 = partially disagree, 4 = partially agree, 5 = agree, and 6 = strongly agree). Table 1 shows how the items correspond to the five factors (i.e., subscales) in the questionnaire. The first four factors are groups of strategies that serve a common function. For example, the four directed attention strategies are used when learners realise that they need to maintain their focus on the listening input so that their comprehension will not suffer from a lack of attention. A response indicating ‘strongly agree’, ‘agree’, ‘disagree’ and ‘strongly disagree’ for the four strategy subscales suggest that the respondent is certain about their use of a particular strategy when introspecting on the processes involved in an earlier listening task. On the other hand, when ‘partially agree’ or ‘partially disagree’ is selected, it would suggest a lack of certainty. The scores on the higher (i.e., 5 and 6) and the lower (i.e., 1 and 2) ends of the Likert scale should therefore be interpreted as 1) reflecting use of more or fewer of the strategies in question and 2) greater certainty (as opposed to “3” and “4”) about use of a particular strategy. Responses on different points in the scale for the person knowledge factor would indicate a respondent’s confidence in listening.

Listening proficiency test

The participants also completed a listening proficiency test as part of programme-wide progress assessment. This test was the listening component of an IELTS (International English Language Testing System) official sample test (University of Cambridge Local Examinations Syndicate, 2001). The listening component consisted of 40 items in four sections and took about 30 minutes to complete. The four sections were based, respectively, on the recordings of a dialogue, a monologue, a multi-party conversation, and a mini lecture that increased in difficulty. The recorded texts were concerned with situations related to students’ social and educational needs. The participants listened to the recordings only once but were given time to read the questions and write down their answers. Instead of bands, each of the participants was given a score, which was the total number of test items answered correctly. The internal consistency of the test was acceptable (α = .87).

Data collection and analysis

The participants responded to the questionnaire at the end of a listening class in which they practised listening to several short information texts, took notes, and completed missing information. Cronbach’s alphas were calculated for the MALQ scale and its five subscales. The results of the internal consistency analyses were very close to those reported for the
validation study of the MALQ (Vandergrift et al., 2006): .67 for directed attention; .78 for mental translation; .73 for person knowledge; .71 for planning and evaluation; .73 for problem solving; and .76 for the overall MALQ scale. These reliability coefficients indicated that the MALQ scale and its subscales had acceptable reliability for the learners involved in the study.

Data coding
For 18 of the 21 MALQ items, the Likert-scale points chosen by the participants were coded as their scores for the items. The remaining three items (#3 and #8 for person knowledge, and #16 for directed attention) were reverse-coded (see Vandergrift et al., 2006). After the MALQ data were coded, scores for the five subscales and the overall MALQ scale were computed. A participant’s scores for all the items on a subscale were averaged to obtain his/her score for the subscale. An overall MALQ scale was derived by averaging each participant’s scores for all the five subscales. Because the mental translation strategies were negatively related to the other subscales (see Vandergrift et al., 2006), the Mental Translation subscale was reversed before the averaging was done. This composite MALQ score was an overall measure of learners’ metacognitive awareness of L2 listening. Such an overall MALQ measure has been used in previous studies (e.g., Baleghizadeh & Rahimi, 2011; Vandergrift et al., 2006; Zeng 2012).

Data analysis
To assess the relationship between the participants’ metacognitive awareness of L2 listening as measured by the overall MALQ scale and their L2 listening proficiency as measured by the IELTS sample listening test, a bivariate regression analysis was conducted. To further determine how various aspects of metacognitive awareness of L2 listening would relate to L2 listening competence, a simultaneous multiple regression was then run with the participants’ scores for the five MALQ subscales serving as predictor variables and their listening scores as the outcome variable. Finally, the participants’ scores for the five MALQ subscales were submitted to a one-way repeated-measures ANOVA to explore whether there were significant within-subjects differences between the different aspects of their metacognitive awareness. All the statistical analyses were conducted with SPSS (Version 19). The alpha level was set at .05 for each statistical test.

Results and Discussion
Descriptive statistics for the listening scores, the five MALQ subscales, and the overall MALQ scale are presented in the last two rows of Table 2. On average, the participants scored 24.58 out of a maximum 40 in the IELTS sample listening test, indicative of their intermediate listening proficiency. The sizeable standard deviation of 5.47 showed that there was considerable variability in listening proficiency among the participants. The mean MALQ score was 3.96 on a 6-point scale, showing that the participants reported a moderate level of strategy use and confidence regarding listening. Of the five MALQ subscales, the participants scored considerably higher for directed attention and problem solving than for mental translation and person knowledge, with the mean score for planning and evaluation falling in between. The markedly higher standard deviation for person knowledge showed much inter-learner variation on this subscale. In the following sections, we present and discuss the results of the aforementioned inferential analyses in relation to the research questions we formulated for this study.
Is There a Relationship between Metacognitive Awareness of L2 Listening and L2 Listening Performance?

To ensure the validity of the planned bivariate regression analysis to answer our first research question, statistical assumptions underlying bivariate regression were assessed. First, the adequacy of the sample size was evaluated with Green’s (1991) formula for analysing a medium-size relationship between individual predictor variables and an outcome variable: \[ N \geq \left( \frac{8\bar{f}^2}{m-1} \right) + (m-1), \]
where \( \bar{f}^2 = .13 \) for a medium effect size and \( m = \) number of predictor variables. Cohen’s (1988) criterion for the medium effect size was adopted because a recent analysis of 27 meta-analyses of second language research by Oswald and Plonsky (2010) has found the mean effect sizes falling between Cohen’s criteria for medium and large effect sizes. Based on the formula, the minimum sample size required for the bivariate regression would be 62, which was well exceeded by our sample size of 113. Second, the two variables involved (i.e., scores for the overall MALQ scale and for the IELTS sample listening test) were screened for potential univariate outliers. No cases with \( z \) scores exceeding 3.29 (\( p < .001 \)) were found. Next, Mahalanobis distances and Cook’s distances were examined to detect potential multivariate outliers and influential cases. No cases with Mahalanobis distances significant at .001 were found (Tabachnick & Fidell, 2007). Cook’s distances, which measure the impact of specific cases on the regression coefficients, were all well below 1.00, the criterion typically adopted to identify influential cases (Field, 2009). In addition, the assumption of independence of errors was assessed with the Durbin-Watson test (Field, 2009) and was not violated. Finally, assumptions of normality, linearity, and homoscedasticity of residuals were evaluated by examining the plot of standardized residuals against standardized predicted values as well as the histogram and normal probability plot of the residuals (Tabachnick & Fidell, 2007). No clear deviations from the assumptions were identified. Taken together, these results indicated that the regression model fitted the observed data well and was generalizable (Field, 2009).

The bivariate regression run to test the relationship between metacognitive awareness and L2 listening proficiency was statistically significant, \( F (1, 111) = 27.00, \ p < .001 \). The participants’ overall MALQ scores were found to be significantly related to their scores in the IELTS official sample listening test scores (\( M = 24.58, \ SD = 5.47 \)). The higher the participants scored on the MALQ scale, the higher they scored on the listening test. Metacognitive awareness of L2 listening as measured by the MALQ scale accounted for 20% of the variance in L2 listening proficiency as measured by the listening test (\( r = .44, \ r^2 = .20 \)). Compared with the criteria proposed by Cohen (1988), the effect size observed in the analysis well exceeded the suggested value (i.e., \( r = .30 \)) for a medium effect and approached the value (i.e., \( r = .50 \)) for a big effect.

By relating learners’ overall MALQ scores to their listening scores, we sought a better understanding of how learners’ metacognitive awareness about listening may be a factor in their listening proficiency without suggesting a causal effect (see Macaro et al., 2007). The significant relationship identified by the bivariate regression analysis provided a further measure of support for metacognition as contributing to variance in learning performance (Veenman & Spaans, 2005; Veenman et al., 2006). More specifically, the amount of variance in listening performance accounted for by the MALQ scores were consistent with but greater than previous reports of 13% (Vandergrift et al. 2006) and 15% (Zeng, 2012) variance. The results of the bivariate regression analysis also corroborated evidence from a number of descriptive studies using think-aloud protocols, listening diaries and post-listening reflections which found that higher proficiency listeners reported more strategies than did listeners at lower levels of proficiency (e.g., Smidt & Hegelheimer, 2004; Vandergrift, 1997). Although
learners who scored higher on the MALQ also scored higher in the listening test, details of the results showed only an overall moderate level of strategy use and confidence even for these higher performing listeners. The overall mean was a mere 3.96 out of a possible maximum of 6, approximating only a “partially agree” response. The standard deviation of 0.43 indicated that differences among learners, though noticeable, did not seem substantial. The moderate level of metacognitive awareness revealed in the present study bore some similarities to the profile of strategy use and confidence by Chinese ESL learners in Liu and Goh’s (2006) study who reported using more strategies and greater confidence after a period of metacognitive instruction. These learners had earlier shown some use of listening strategies and revealed anxiety about their listening.

These features of the participants’ metacognitive awareness were likely to have been influenced by the context in which they learnt listening. These students were enrolled in an intensive academic English course, which focused on listening and note-taking practice. The curriculum did not have a strategy instruction component, so their exposure to listening strategies depended on the extent of any incidental learning of listening strategies or first language listening experience. Thus, their strategy knowledge would have been limited. In addition, they had never been asked to use any prompts to evaluate their listening performance or reflect on the mental processes that they engaged in. The administration of the MALQ was the first time when they had been presented with a ‘checklist’ and it is conceivable that some participants could not identify some of the processes when thinking about their own listening. For participants who had clearly applied a strategy, we would expect them to respond with “agree” or “strongly agree”. On the other hand, those who had not consciously approached the listening task strategically, we would expect them to express tentativeness and select a “partially agree” or a “partially disagree” response. A close examination of individual participants’ responses to the 21 items on the MALQ revealed that for 12 of the items, at least 40% of the 113 participants selected “partially agree” or “partially disagree,” indicating considerable uncertainty about the processes in question. For other participants, however, a moderate MALQ score may not have reflected certainty about, but the extent of use of, the target strategies: they reported the use of some strategies with certainty (i.e., “strongly agree” and “agree”) and the non-use of other strategies with equal certainty (i.e., “strongly disagree” and “disagree”).

How Do Various Aspects of Metacognitive Awareness of L2 Listening Relate to L2 Listening Performance?

To answer our second research question, a simultaneous multiple regression was performed to explore the relationship between L2 listening performance (measured by the IELTS sampling listening test) and various aspects of metacognitive awareness of L2 listening (measured by the MALQ subscales), viz. directed attention, mental translation, person knowledge, planning and evaluation, and problem solving. As was the case with the bivariate regression, statistical assumptions underlying multiple regression were evaluated. The sample size was adequate compared with the minimum required sample size of 66 estimated with Green’s (1991) formula. One possible univariate outlier (z > 3.29) was found for two subscales: directed attention and problem solving. Given the sample size, one or two z scores in excess of the critical value were expected. Consequently, the two cases were retained. No multivariate outliers were identified. Cook’s distances were all well below 1.00, indicating that there were no cases that had an undue influence on the regression coefficients. The Durbin-Watson test indicated that the assumption of independence of errors was met. So were the assumptions of normality, linearity, and homoscedasticity of residuals. Finally, tolerance...
values, ranging between .72 and .87, were well above the conventional cut-off of .10, indicating no cause of concern for multicollinearity and singularity (Cohen, Cohen, West, & Aiken, 2003).

Following the reporting format recommended by (Tabachnick & Fidell, 2007), the results of the multiple regression are summarized in Table 2. The results include the zero-order correlations between the predictor and outcome variables, the means and standard deviations for the variables, the unstandardized regression coefficients ($B$), standard error for $B$s ($SE_B$), the standardized regression coefficients ($\beta$), $R$, $R^2$, adjusted $R^2$, and the squared semipartial correlations ($sr^2$) representing the unique contribution of individual predictors to the $R^2$. The overall regression model was statistically significant, $F (5, 107) = 6.05, p < .001$. The $R^2$ value of .22 (95% confidence limits = .07 and .33) indicated that 22% of the variance in listening proficiency was predicted by the 5 MALQ subscales. The strength of association (i.e., $R = .47$) yielded by the analysis well exceeded the suggested value for a medium effect and came very close to that for a big effect. Of the 5 MALQ subscales, person knowledge and problem solving were significant predictors for the outcome measure of L2 listening proficiency. A third subscale – directed attention – fell just short of statistical significance ($p = .06$). The three predictors contributed .054, .031, and .025 unique variability, respectively. Together with other predictors, they contributed another 11% in shared variability. The size and direction of the relationships suggested that the participants who reported a lower degree of difficulty and anxiety and greater use of problem solving strategies and, to a less extent, strategies for directing attention possessed greater L2 listening proficiency. Among the three significant predictors, person knowledge was the most important, as reflected in its squared semipartial correlation, followed by problem solving and directed attention.
Table 2
Simultaneous Multiple Regression of MALQ Subscales on L2 Listening Proficiency (N = 113)

<table>
<thead>
<tr>
<th>Variables (IV)</th>
<th>Listening test (DV)</th>
<th>Directed attention</th>
<th>Mental translation</th>
<th>Person knowledge</th>
<th>Planning &amp; evaluation</th>
<th>Problem solving</th>
<th>MALQ</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>sr² (unique)</th>
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<tr>
<td>Directed attention</td>
<td>.30**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.417†</td>
<td>0.766</td>
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<td>.025</td>
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<tr>
<td>Mental translation</td>
<td>-.22*</td>
<td>-.06</td>
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<td></td>
<td>-0.843</td>
<td>0.574</td>
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<tr>
<td>Person knowledge</td>
<td>.33**</td>
<td>.12</td>
<td>-.33**</td>
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<td></td>
<td>1.309**</td>
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<td>Planning &amp; evaluation</td>
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<td>.20*</td>
<td>-.20*</td>
<td>.03</td>
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<td></td>
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<td>0.762</td>
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<tr>
<td>Problem solving</td>
<td>.28**</td>
<td>.41**</td>
<td>.09</td>
<td>.08</td>
<td>.41**</td>
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<td>2.975</td>
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Adjusted $R^2 = .184$

Means

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<td></td>
<td>24.58</td>
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<td>Standard deviations</td>
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<td>0.68</td>
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<td>1.04</td>
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$R = .469^{***}$

$sr^2$ (unique)  

*Unique variability = .11; shared variability = .11, 95% confidence limits from .07 to .33.
† $p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$. 

Means

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The finding regarding person knowledge as the most important positive predictor of L2 listening proficiency indicated that the better performing listeners in our study expressed greater confidence and lower anxiety when listening. This result supported observations that less successful learners tend to show a lack of confidence and greater concern for their performance which they find are beyond their control (Graham, 2006; Lynch, 1997). This is perhaps unsurprising since it stands to reason that learners who are more successful in achieving their goals will likely report greater confidence. In other related studies (e.g., Wenden, 1991; Yang, 1999; Zimmerman & Schunk, 2001), it has also been shown that confidence and anxiety were significantly related to learners’ approach to learning and performance, including strategy use and task persistence. However, the overall mean score for person knowledge was a mere 3.22 with a relatively large standard deviation (i.e., SD = 1.04), indicating that the learners on the whole were not all that confident and that there was considerable individual difference in this regard among them. This supports Liu’s observation of students in a similar programme who identified listening to be their weakest skill which they found most challenging (Liu, 2005; Liu & Goh, 2006). The learners’ reflection on their listening experience could have been a result of various factors, such as past experiences with listening in their interaction with other speakers of English and listening activities in class. An absence of explicit metacognitive instruction could have also limited opportunities for the learners to increase their knowledge about listening processes and strategies as well as enhancing their listening performance with the help of appropriate strategies. The lack of curriculum embedded spaces for talking about efforts at learning to listen could also have reinforced the learners’ feelings of anxiety, inadequacies, and poor confidence.

As regards the second significant positive predictor of L2 listening proficiency – i.e., the learners’ reported use of problem solving strategies, it is relevant to note that three of these strategies (i.e., Items 5, 17, and 19) were for making inferences of meaning of words or parts of the listening text with familiar words, contexts, and background knowledge. Inferencing strategies have been widely documented and attributed to listeners of various proficiency levels. Making inferences commonly occur in first language comprehension (Graesser, Singer, & Trabasso, 1994; McKoon & Ratcliff, 1986, 1992) and such cognitive processes may be readily activated when listening in an L2 (Mendelsohn, 1995). There are, however, differences in the way listeners of different proficiency apply the strategy of inferencing, with higher proficiency listeners using more ways for operationalizing it but low proficiency learners limiting their use to a smaller range of strategies (Goh, 1998). Thus, even though the lower proficiency listeners in the present study might have also made inferences of the meaning of words or text, their lower scores for the subscale of problem solving suggested that they did not use all the different ways for inferencing presented in the MALQ.

The other three problem-solving strategies (i.e., Items 7, 9, and 13) in the MALQ are used for monitoring and evaluating comprehension during listening with the help of prior knowledge and other parts of the listening input. These are metacognitive strategies and involve planning, monitoring and evaluating as the input is being processed and stored. Unlike making inferences, which directly manipulates information in the listening text, metacognitive strategies are part of the executive processes that manage thinking and comprehension. Learners have to pay attention to the text, process meaning, and think about the way they are thinking as they try to make sense of what they hear. Lower proficiency listeners may be so constrained by other listening difficulties that they do not have the mental capacity to monitor their comprehension in real time. Like participants in previous research, the lower proficiency listeners in our study might not have used the more complex metacognitive strategies involving different sources of knowledge to check their
comprehension. To verify this hypothesis, we examined the participants’ scores for problem solving in relation to their IELTS scores. Our examination showed that 70% of the learners who scored above the group mean for the listening test scored 4.5 or higher for the subscale, suggesting that the higher performing listeners were quite certain about using all or most of the problem solving strategies. The low performing listeners on the other hand were markedly less certain.

The use of directed attention is noteworthy even though it fell just short of statistical significance as a positive predictor of L2 listening proficiency in the multiple regression analysis. In general language learners notice when their attention is waning and many also feel that in order to improve their comprehension they need to concentrate hard on the input. They may, however, direct their attention to the input for different purposes. Some may want to use all the words to construct their understanding or link them together to make some meaningful utterances before interpreting the message. This attempt to “summarize” the main message of the text is not always useful, however, particularly for low proficiency listeners who may have problem with recognizing some key words and end up with bits of inaccurate information which do not contribute to a coherent interpretation (Vandergrift, 1997; O’Bryan & Hegelheimer, 2009). Higher proficiency listeners, on the other hand, may be trying to concentrate on various parts of the text in order to use the new information to confirm what they have just heard. They may also notice that they have not understood something and therefore try to listen out to new parts of the text to compensate for it (Goh, 1998). These reasons for the popular use of directed attention strategies would likely explain the high mean score of 4.54 in the present study, which also happens to be the highest mean among all the five MALQ subscales.

Interestingly, mental translation, which is normally seen to be a strategy used mainly by low proficiency listeners (Eastman, 1991; Goh, 1998; Vandergrift, 2003b), was not found to be a significant predictor of L2 listening proficiency in the multiple regression analysis. However, there was a significant negative zero-order correlation ($p < .05$) between reported use of mental translation and L2 listening scores (see Table 2). The same direction of the relationship was also found in the multiple regression analysis. Translating words into their first language occurs in the listening development trajectory of most language learners, particularly those who have experienced instruction in bottom-up processes where the focus is on using words to build up their understanding of a text. Thus, it is not unusual to find many lower proficiency L2 listeners resorting to translating what they hear either word for word or as chunks and phrases. This may have to do with their lack of vocabulary knowledge (Bonk, 2000) as well as their inability to recognise the sounds of words that they may know in print (Goh, 2000). With time, however, many learners develop greater automaticity in word recognition and interpretations, as more advanced neural networks are developed to produce faster parallel processing of text and meaning (Hulstijn, 2003; Segalowitz, 2003). The mean score of 3.06 nevertheless shows that the learners did not find themselves resorting frequently to translating key words or entire utterances word by word.

Planning and evaluation strategies are important to L2 learning (Wenden, 1998) and especially so for listening success (Vandergrift, 2003b). The multiple regression analysis did not identify reported use of such strategies as a significant predictor of L2 listening proficiency. The mean score of 3.68 indicates that the learners reported an overall moderate use of strategies for preparing to listen and evaluating listening performance. Planning strategies prepare learners to approach a listening task and consider how to cope with problems that may arise in the course of their listening. As the learners had not received
explicit strategy instruction, it is to be expected that they were not familiar with these metacognitive processes. The participants in the study might have approached their listening task with the more established practice of guessing the content before listening to activate their schema or prior knowledge about the topic. The focus of this type of planning, however, is on the content rather than the listening process, which involves having a goal in mind, making a plan on how to listen, and thinking about similar texts they have approached in the past (see Items 1, 10, and 21 in the MALQ). Another process-oriented strategy is evaluation. Unlike comprehension monitoring which takes place concurrently with listening, comprehension evaluation can be carried out any time after an individual has finished listening (see MALQ Item 14) or has arrived at some tentative interpretation (see MALQ Item 20). The purpose is to check the extent to which an interpretation is accurate and acceptable against a number of sources, such as the overall context of the spoken message and prior knowledge of the topic. The benefit of evaluating comprehension is that the result could lead to learners’ more active and appropriate planning for the next time they listen through a cycle of planning-evaluation-planning in their process of learning to listen (Vandergrift, 2004). Evaluation strategies are not commonly used by language learners in general and when they are reported, it is usually the higher proficiency listeners who engage in more ways of evaluating their interpretation (Goh, 1998). The overall mean score for the planning and evaluation subscale was the lowest when compared with problem solving and directed attention. The nonsignificant relationship between this subscale and L2 listening proficiency further suggested that the participants regardless of listening ability had not exploited the full potential of these useful strategies to enhance their listening.

Are There Significant Intrapersonal Differences among the Different Aspects of Metacognitive Awareness of L2 listening?

To address our third research question, a one-way within-subjects ANOVA was run on their scores for the five MALQ subscales. Mauchly’s test statistic indicated that the assumption of sphericity was not met, χ²(9) = 103.57, p < .001. The Greenhouse-Geisser correction was used to adjust the degrees of freedom (ε = .67). The ANOVA revealed a significant effect for the within-subjects variable, F(2.68, 300.38) = 86.80, p < .001, ηp² = .44. The standardized effect size exceeded the conventional value for a big effect (Cohen, 1998) and indicated that the within-subjects variable (i.e., aspects of metacognitive awareness of L2 listening) accounted for over 44% of the total variance in the data.

Post hoc pairwise comparisons with the Bonferroni correction revealed that the participants scored significantly higher for directed attention (M = 4.54, SD = 0.68) than for mental translation (M = 3.06, SD = 0.89), person knowledge (M = 3.22, SD = 1.04), and planning and evaluation (M = 3.68, SD = 0.68), though the difference was not significant in the case of problem solving (M = 4.41, SD = 0.60). Their scores for problem solving were also significantly higher than those for mental translation, person knowledge, as well as planning and evaluation. In addition, the participants scored significantly higher for planning and evaluation than for mental translation and person knowledge, but the difference between the latter two was nonsignificant.

Taken together, the results reported above revealed considerable intrapersonal variation with regard to different aspects of metacognitive awareness of L2 listening. In other words, individual participants did not report similar levels of strategy use (for the four strategy-related subscales). For example, a learner might have indicated with certainty that he or she had used directed attention and problem-solving strategies but showed only partial agreement or disagreement on whether s/he had used mental translation. The same participant might also
have reported a high level of listening anxiety even though s/he had also applied some useful comprehension strategies. This scenario is supported by a comparison of the respective mean scores for the five MALQ subscales. Directed attention and problem solving which had the highest and second highest mean scores respectively were likely to have been used by many if not most participants. We have seen earlier that problem solving strategies were particularly popular among higher proficiency listeners. In contrast, mental translation, together with planning and evaluation, had the lowest and second lowest mean scores, suggesting that participants who had reported using directed attention and problem-solving strategies might not have used mental translation or some strategies for preparing to listen and evaluating their comprehension. These patterns of strategy use support our current understanding from the literature that many language learners still do not use a wide range of metacognitive strategies that can enhance their listening process through planning for listening, monitoring comprehension, and evaluating comprehension.

Conclusions and Implications
This study has provided further empirical evidence of language learners’ metacognitive awareness of L2 listening through the administration of the MALQ to a large group of learners at the end of a listening class where they had completed their regular listening practice. The purpose was to get the learners to reflect on their listening process with the help of the MALQ items acting as prompts and to report if they had used any particular strategies or felt any difficulty and anxiety. The responses from the 113 participants indicated that they were aware of their listening processes and of the challenges they faced as L2 listeners. They reported an overall moderate level of strategy use but a closer examination of the means of each of the four strategy subscales showed that two groups of strategies were particularly important. These were directed attention and problem solving strategies. There was less use of planning and evaluation strategies and even less use of mental translation. Responses to items on the person knowledge subscale had the second lowest mean, thus indicating moderate to low levels of confidence. Nevertheless there was strong evidence of a positive relationship between scores in the MALQ and scores in the test of listening performance. This relationship was consistent with findings from earlier studies and further strengthened the observation that variance in listening proficiency can be explained in good measure by metacognitive awareness. It showed that metacognitive awareness accounted for 22% of the variance in listening proficiency as measured by an IELTS sample test, thus further supporting claims in two previous MALQ studies (Vandergrift et al., 2006; Zeng, 2012).

The results also lend support to a process-oriented approach that develops learners’ strategies and metacognitive knowledge about learning to listen (Graham & Macaro, 2008; Vandergrift & Goh, 2012). Learners in this study who performed better in the listening test were also the ones who reported greater confidence and lower anxiety. While we must be careful not to attribute any causal relationships between metacognitive awareness and listening performance, the results do indicate that something needs to be done to help low-performing listeners improve their confidence. Graham and Macaro (2008) observed that positive results in listening comprehension were linked to changes in self efficacy, thus pointing to a positive role that changes in confidence level could have in progress in listening comprehension even for the less able listeners. There have been concerns about whether teaching learners about the process of listening could lead to improvements in listening performance, and there are even calls to abandon a strategy approach in preference for more listening practice. In examining the results of our study and those of intervention studies on teaching learners how to listen, there is empirical support for the place of metacognitive awareness in listening development. The effect on comprehension may not always be direct, however. Learners do
badly in listening for a variety of reasons, including affective ones which lead to stress and anxiety during listening because learners feel they are not in control of their listening process. Nevertheless, teachers can help learners develop greater confidence in themselves and greater awareness of their learning by getting learners to deconstruct the various facets of learning to listen. This can be done through teacher explanations and modeling as well as learner reflections, peer-peer dialogue and experience with strategy use (Cross, 2010, 2011a). Learners can also be shown how proficient listeners combine or orchestrate the use of different effective strategies.

There are no quick fixes for language development, which is a multifaceted process requiring among other things direct input, interaction and dialogues, and personal reflection. We can nevertheless help learners along the path to obtaining greater success with listening through helping them develop person, task and strategy knowledge that is rich and personally meaningful. This can potentially help learners know how to self-regulate their thinking during listening and foster stronger motivation and greater confidence. Such changes in their cognition and affect can enable learners to recognize and make use of opportunities to improve their listening in class, and on their own and with peers outside class. The overall moderate mean score found in this study for planning and evaluation strategies suggests that more could have been done to increase the learners’ metacognitive awareness during the course. Including a process focus in a listening curriculum could create opportunities for learners to explore their person knowledge by identifying their challenges and finding ways to overcome them. The explorations of person knowledge coupled with strategy training could lead learners to feeling more prepared and less anxious.

Apart from exploring the research questions, this study also attempted to offer greater clarity in the way learners’ metacognitive awareness can be examined through an instrument such as the MALQ. Questionnaires are a legitimate procedure for helping learners introspect in their learning processes (Matsumoto, 1993) but their scope tends to be limited, unlike other introspective methods such as think-alouds, interviews, and diaries which do not limit what participants can report. While the three ‘open’ elicitation procedures require participants to express their metacognitive knowledge freely and explicitly as if they were writing on a blank page, a close-ended questionnaire like the MALQ does not require them to verbalise their knowledge but rather to reflect on the statements which represent some aspects of this knowledge. Consequently, it cannot elicit metacognitive knowledge that an individual may possess but is not included in the questionnaire. Furthermore, because they are typically used to quantify responses and examine group tendencies in research studies, close-ended questionnaires are not well equipped to address individual variation. Questionnaires are nevertheless useful for helping researchers get precisely the kind of information they are looking for; for example, the five MALQ subscales help to identify reported use of four groups of strategies and perceptions of difficulty and anxiety. The MALQ results need to be interpreted in a more nuanced manner, however. MALQ scores reflect both the relative level of metacognitive awareness and to some extent the relative level of certainty. Answers that are partially in agreement or disagreement with the MALQ items would suggest that the learners are not certain of using a particular strategy. The scores for the person knowledge items on the other hand would directly reflect the learners’ levels of confidence and anxiety with regard to listening. These findings are an important source of information about the learners’ strategy and person knowledge.

Given the recognition that learning is influenced by the social and cultural spaces it is situated in, future research should also consider using cross-sample comparisons to
understand L2 learners’ metacognitive awareness in these different spaces. The MALQ may need to be complemented with a questionnaire that elicits information about the cultural and pedagogical contexts in which L2 listening instruction takes place so that richer insights could be gained from a comparison of these contexts. It would also be useful to administer the MALQ each time after learners have completed different kinds of listening task involving different text genres and different listening demands. The results from a comparison of the different MALQ scores will contribute useful empirical evidence to discussions about how strategy use and learners’ perceptions of difficulty and anxiety may be affected by task types.

Through this and other studies, the MALQ has been shown to be a useful and reliable research instrument for eliciting learners’ metacognitive awareness about their strategy use and sense of efficacy, but it can also take on important pedagogical roles in at least two ways. Firstly, the MALQ can be a simple and effective checklist for prompting learners to reflect on their listening. For most if not all participants in the study, it was probably only upon referring to the MALQ items that they began to focus on the mental processes that they had engaged in. The moderate mean score in the MALQ was therefore likely to do with an overall lack of strategy knowledge and perceptions of difficulty and anxiety on their part. Such results would point to the need to include more metacognitive activities. Responses which indicate partial agreement or disagreement are particularly interesting because they indicate a lack of certainty and these items can be useful talking points in a discussion about listening processes. Secondly, learners can also use the instrument as a regular checklist over a period of time for monitoring their own listening development. The statements in the MALQ items will give learners the language they need to talk about unseen processes which they experience, thus giving them a tool to further discuss their learning with their teachers and peers. Such process-oriented discussions are an important part of a listening curriculum that harnesses the potential of learners’ metacognition.

References


Language Awareness, 15, 199–219.