

Developing and Validating the Metacognitive Awareness Speaking Questionnaire

Titus Sulistyowati^{1*}, Januarius Mujiyanto², Dwi Rukmini³, and Rudi Hartono⁴

¹²³⁴Universitas Negeri Semarang

*Corresponding author. Email: titus.sulistyowati@umk.ac.id

ABSTRACT

Researchers investigate the impact of metacognition on language learning achievement and report that metacognition positively influences learners' learning achievement. Instruments to measure learners' metacognition have been developed to meet the needs. This article describes an instrument's development and validation process to assess English foreign language (EFL) speakers' metacognitive awareness. This questionnaire is developed based on metacognitive knowledge. A review of the relevant literature related to metacognition and learners' regulations of speaking strategies is presented to support the metacognition questionnaire development. The development of the MASQ involves one expert in psychology and three EFL teachers. They give the final consideration and assessment based on the construct and content validity. The writers conduct a tryout test by involving 51 EFL students from three different universities in Central Java. The analysis of the validity and reliability of the questionnaire is done by utilizing SPSS software. The validity test adopts the product-moment correlation analysis, and the reliability test follows Cronbach's Alpha statistical analysis and measurement standard. This study presents a questionnaire with 21 questions designed to assess EFL speakers' metacognitive awareness. This behavior-based questionnaire uses the Linkert scale system and is designed to measure the level of metacognitive awareness in speaking.

Keywords: *Metacognitive Awareness, Metacognitive Knowledge, Validity, Reliability, and Questionnaire*

1. INTRODUCTION

Many scholars have been investigating the influence of learners' metacognitive awareness on EFL learning. Jaleel and Premachandran report that metacognitive knowledge played a crucial role in supporting independent learning because it provides vivid learning steps by planning and evaluating learners' goals and achievements. Learners who are aware of metacognition will always think about how to manage themselves to become good thinkers. They can set and manage their way of learning to achieve good understanding in completing the tasks. They are aware of various strategies and understand how to apply them. Therefore metacognitive awareness will contribute to the students' success in acquiring the language skills through any learning strategies they use in learning. [1]

The influence of metacognitive awareness on listening skills is also confirmed by several researchers [2]–[4]. They confirm that learners' metacognitive awareness level and listening comprehension share a mutual correlation. Zangand & Goh have studied Singaporean learners use strategy knowledge and perceived strategy to increase their listening and speaking practice capability. Those strategies represent the use of metacognitive knowledge in EFL learning [5].

Some studies also claim that metacognition and language learning functions mutually affect each other. Some investigation of the same focus also explains that learners with metacognitive awareness will perform clear steps and strategies to understand their actions when they learn and think. Therefore they will have a higher chance to be the most successful learners. [6]–[9]

Investigations on metacognition and metacognitive strategy prove that learners' speaking proficiency and metacognition are correlated. The findings of the research claim that metacognitive learning strategies offer benefits to increase student's confidence and their English speaking proficiency. After practicing the strategy, students value and practice the metacognitive strategy independently [10]. Other researchers have examined the influence of metacognition in teaching listening and speaking practices. They involve detailed metacognitive knowledge applied in the learning instruction and metacognitive use as a learning strategy. The studies evaluate how metacognition and other embedded learning aspects such as self-regulations, self-efficacy, and motivations affect learners' speaking and listening proficiency. [11][7], [12]

Scholars have designed many instruments to measure metacognition and learners' regulation. Each

instrument highlights different aspects of metacognition. Generally, the instruments include learners' self-efficacy, learning expectations, motivation, and strategy regulation. Based on the principles of metacognitive knowledge, the writers developed a speaking questionnaire to assess EFL speakers' metacognitive awareness. Previously, some questionnaires were designed to assess metacognitive awareness in learning, generally used in many subjects. A 52-items inventory to assess metacognitive awareness is developed base on two big categories; knowledge about cognition and cognition regulation [13]. Many scholars have adopted this MAI (Metacognitive Awareness Inventory). In 2006, Vandergrift & Goh developed and validated a questionnaire to measure EFL students' metacognitive awareness in listening by referring to the previous questionnaire and inventory [3]. In this study, the writers intend to adopt and revise the MALQ to develop the Metacognitive Awareness Questionnaire for speaking.

Due to the importance of metacognitive awareness for language learning, the writers develop the MASQ to measure the learners' metacognition in speaking practices. This instrument can assess the extent to which students use speaking strategies and evaluate their effectiveness. Metacognition in speaking is as important as metacognition in listening. It is believed that listening and speaking have mutual effects during learning practices.

Some experts highlighted the importance of metacognition in the context of language learning. Anderson states that metacognitive learning provided learners to experience cognitive or practical learning. The purposes are highlighted in a cognitive learning activity, and affective actions are practiced and developed in students' steps to achieve those goals. When learners develop greater metacognitive awareness, they can control and manage how they learn and evaluate and revise their strategy in learning. Therefore metacognition will have positive influences on the success of the students' language learning achievement. [14]

Vandergrift and Goh say that learners are required to explore and attain the following aspects of metacognitive knowledge. They were Person Knowledge: knowledge of the self as a learner in the L2. No learner was the same, and these individual differences were bound to affect the learning processes. The metacognitive strategy allowed the learner to adapt and choose strategies that will benefit in the long term. Task knowledge refers to knowledge of the task presented and the objectives, whether the task required true or false answers, detailed or short answers, or the ability to identify keywords. Strategy knowledge refers to knowledge of strategies available to achieve the purpose of that particular task in question. [2], [15]–[17]

Metacognitive awareness is awareness within learners' minds associated with strategies individuals use and develop through learning and practices. Schraw & Dennison [18] highlighted three aspects: Declarative

Knowledge (DK), Procedural Knowledge (PK), and Conditional Knowledge (CK). Declarative knowledge refers to the learners' awareness in choosing proper strategies and understanding the essential concepts of a given task. Procedural knowledge refers to the learners' awareness of managing concepts in a specific and detailed procedure to use certain strategies to carry the task well. Conditional knowledge refers to the learners' awareness of applying and evaluating specific knowledge and strategies during learning. Students are aware of selecting learning strategies and evaluate the effectiveness of the strategy. [13], [19]

In conclusion, metacognition can be considered a regulation to facilitate learners to acknowledge, be aware, and comprehend their learning regulation and manage to control their cognitive performance. This regulation assists learners in organizing their learning performance to gain maximum achievement consciously. Metacognition refers to the learners' conscious awareness of the learning materials and the regulation to learn. It is series of learning strategy applications and evaluations on learning plans and goals and strategy implementation [20], [21]. Some researchers have developed instruments to measure metacognition to analyze and evaluate how metacognition and learning achievement give mutual influence. The measurement instruments include close-ended questionnaires, observations checklists, think-aloud protocols, performance measurements, and face-to-face interviews [22].

The design of the instruments is adjusted to meet the need for metacognition measurements. These are the instruments commonly used to measure the extent to which a learner might possess metacognitive awareness. Metacognitive awareness instruments in the form of self-assessments are the Motivated Strategies for Learning Questionnaire (MSLQ) [23], the Learning and Study Strategies Inventory (LASSI) [24] in [25], and the Metacognitive Awareness Inventory [18]. The MSLQ is designed as a self-report metacognition assessment. It includes students' motivation, expectations, and affect and a strategic regulation section that records the learners' application of cognitive, metacognitive, and strategic management systems [22]. LASSI was created by highlighting the issue of learners' learning methods and their effect on learners' learning outcomes [26].

MSLQ and LASSI inventories were developed base on strategy knowledge of metacognition. They construct the substances by inferring to broader theories of strategies in language learning. On the other hand, the MAI was designed by inferring the two essential aspects of metacognition: knowledge of cognition (17 items) and regulation of cognition (35 items). They refer to knowledge about cognition and regulation of cognition. The knowledge dimension addresses declarative, procedural, and conditional knowledge. The regulation dimension refers to learning procedures, such as planning, information management strategies, monitoring, debugging, and evaluation [13].

Vandergrift & Goh et al. [3] have developed and validated the metacognitive awareness instrument (MALQ). This instrument is designed to measure the metacognitive awareness of the second language (L2) listeners. This instrument also records the learners' strategy applications while practicing listening and completing tasks. They conduct an exploratory factor analysis from a large sample of language learners' responses and confirmatory factor analysis. From the research, they present 21-item substances. The study underlines five prominent factors; Problem-Solving (PS), Planning and Evaluation (PE), Mental Translation (MT), Person Knowledge (PK), and Directed Attention (DA). This questionnaire (MALQ) is developed by referring to Flavell's MAI metacognitive knowledge. They refer to Person, Task, and Strategic Knowledge. [20]

Person Knowledge is learners' perspectives about their learning belief and capability and knowledge about various factors such as motivation and self-efficacy that might influence individual learning achievement. Task Knowledge is the knowledge about the learning task aims, how to cope with the demands and the knowledge about the nature of learning tasks. It allows any learner to acknowledge factors that contribute to causing difficulty in carrying the task. It includes the knowledge of recognizing the characteristics of the task. Strategy Knowledge is the knowledge possessed by the learners to choose appropriate strategies to cope with learning goals and overcome their difficulties during the learning process [20].

2. METHOD

This study is quantitative research carried out to develop and validate a research instrument used to measure students' metacognitive awareness of EFL speaking. The development of the MASQ (Metacognitive Awareness Speaking Questionnaire) involves an expert in psychology and three EFL experts who give the final consideration and assessment. The validation from the experts' judgments is done to analyze the internal validity. Internal validity includes construct validity and content validity [27]. Based on the experts' suggestions and recommendations, the instrument is revised and developed. The assessments of the construct validity and content validity are classified into the following criteria.

Table 1. Validity Criteria

Interval Value	Criteria
>3.6	High Validity
2.8-3.6	Valid
1.9-2.7	Low validity
1.0-1.8	Invalid

The value of the developed instrument internal validity is calculated based on the validators' assessment and evaluation. The validation includes Construct validity and Content validity. Construct validity

represents the extent to which theories can support the substances in the instrument. The validators assess the instrument base on relevant theoretical reviews. In this research, the construct validity assessment is reviewed based on the metacognitive knowledge theory. This validation process involves an expert with a psychology background and an EFL educator with metacognition learning practice experiences. The content validity refers to the instrument coverage. It looks at whether the instrument adequately covers all the content being measured. The items in this instrument should cover the students' speaking' behavior and strategy during speaking practice [27]–[29]. Due to the pandemic situation, the content validity does not include observation as the evaluation process but is based on the validators' experiences during their teaching practices. This validation process involves two EFL-speaking teachers.

The empirical validity in this research is conducted by performing a tryout test. This test involves 51 EFL students from three different universities in Central Java. The analysis of the validity and reliability of the questionnaire is done by utilizing IBM SPSS statistics 25 software. In calculating the validity, the writers adopt the product-moment correlation technique; this analysis correlates each item's score with the total score of the items in the questionnaire. In this study, the reliability test was analyzed using Cronbach's Alpha assessment criteria. A reliability test is conducted to measure how the questionnaire remains consistent after test repetition with the subjects under the same conditions.

3. RESULTS AND DISCUSSION

In designing the substances in the instrument, the writers adopt the MALQ developed by Vandergrift & Goh et al. They developed the previous theories and summarized the three metacognitive knowledge: Person, Task, and Strategy Knowledge. In this study, the writers adjusted those factors and developed and revised the questionnaire for speaking metacognition.

The concepts of metacognitive knowledge in listening [1], [4], [27] are:

1. The Person Knowledge of listening refers to self-concepts and self-efficacy about listening. Person Knowledge is the students' self-awareness of the problems they encounter while listening. Students can identify the causes of the problems and find possible solutions. It is the students' beliefs and individual concepts about the subjects. The activity is done before listening; students set their personal goals for listening development and plan appropriate listening practice opportunities.
2. Task Knowledge of listening refers to the mental, socio-affective processes involved in the listening practices to complete the task. It includes the understanding of factors that influence the achievement and ways to develop outside the class.
3. Strategic knowledge refers to learners' general and specific strategies to achieve listening comprehension and cope with difficulties during practicing. It is the

knowledge about appropriate strategies to be applied for specific listening practice.

Based on the metacognitive knowledge of listening [1], [4], [27], the writers adapt, adjust, and revised the

MALQ to be applied for assessing speaking metacognitive awareness.

Table 2. Metacognitive Knowledge in Speaking

Metacognitive Knowledge	Metacognitive Factors and Speaking Activities
Person Knowledge:	<p>Person Knowledge: Students set their concepts and belief about the subject. e.g., believe that speaking is fun and challenging, motivate themselves for improvement. It reflects in the students' intensive efforts to identify their problems during practicing speaking and their ability to enrich their knowledge about the speaking regulation and the topics they will learn in the class. This knowledge is mainly used in brainstorming activities before speaking practices.</p>
Task Knowledge:	<p>Mental Translation: MT refers to the strategies that students need to avoid if they want to be successful English speakers. Translating during speaking activities is an ineffective strategy for speaking improvement. This mental activity will create speaking problems that affect students' speaking fluency. e.g., translating before speaking, mentally translating while speaking, and thinking in native language before speaking.</p> <p>Direct Attention: It refers to the strategies learners use to stay concentrate on the task. During speaking practice, to complete the tasks, students need to do social interaction. Speaking is an interaction among people. To do the tasks, students need to find partners and maintain the two ways reciprocal communication. Therefore, they need to stay focus and concentrate well. e.g., trying to focus on other speakers and ask questions for better understanding.</p>
Strategy Knowledge:	<p>Planning and Evaluation: It is the strategies learners preparing before the speaking practice and evaluating it after they use them. This strategy depends on the students' knowledge about speaking strategy and how the strategy is used effectively to cope with the speaking tasks. During the strategy applications, students shall evaluate the effectiveness of the strategies. This kind of learning reflection stimulates students to seek speaking problems and find possible solutions. e.g., set a goal before starting the speaking activity, think back on the strategy, and self-questioning the achievement.</p> <p>Problem-Solving: It represents the strategies used by the learners to cope with the speaking difficulties or seek better understanding. Miscommunication or misperception may occur because of the learners' limited vocabulary. They cannot find actual words to express their feeling and achieve their goals. e.g., using other expressions, giving examples to understand better, and doing oral repetition to get the better pronunciation.</p>

This study presents a questionnaire with 21 questions designed to assess EFL speakers' metacognitive awareness. This behavior-based questionnaire on the Likert scale is developed to measure the level of metacognitive awareness in

speaking. Based on three categories of metacognitive knowledge and the five metacognitive factors, the writer developed and validated 21 items Metacognitive Awareness Speaking Questionnaire (MASQ).

Table 3. MASQ substances

Metacognitive Factors	Students' Perception
PE	1. Before speaking practice, I set a plan for the speaking strategy that I will use.
DA	2. I try to concentrate on the speakers and ask them to repeat when I cannot understand clearly.
PK	3. In my opinion, speaking in English is more accessible than reading, listening, or writing.
MT	4. I translate the expression that I am going to speak in English.
PS	5. When I cannot express something in English, I use words with similar meanings.
DA	6. When I lose my concentration, I discover my attention quickly.
PS	7. When I encounter difficulties understanding the speakers, I ask them whether my understanding

- is correct.
- PK 8. In my opinion, English speaking is a challenging activity.
 - PS 9. When I fail to understand the expression, I ask the speakers to clarify it.
 - PE 10. Before speaking practice, I think of texts with the same topic that I may have practiced before.
 - MT 11. I mentally translate in English the question that the teacher has asked other students.
 - DA 12. I try to focus back on the speaker when my concentration is destructed.
 - PS 13. As I speak, I quickly adjust my pronunciation if I realize that it is incorrect.
 - PE 14. After speaking, I evaluate how I speak and try to practice differently in the future.
 - PK 15. I do not feel anxious when I speak English.
 - DA 16. I pay attention to the organization of language form and grammar while I am speaking.
 - PS 17. When not knowing how to express something, I use an example to illustrate what I want to express.
 - MT 18. I mentally translate every word while I am speaking.
 - PS 19. To increase my pronunciation, I imitate spoken material.
 - PE 20. As I speak, I regularly ask myself if my level of speaking fluency is satisfying.
 - PE 21. Before I speak, I set goals and learning achievements in mind.

Edited and revised from [3], [5], [30]

The Person Knowledge (PK) factor refers to the students' self-concept and self-efficacy about speaking and the practice topic. It concerns the difficulties of the EFL learners in perceiving listening and their self-efficacy in English speaking. The items indicate the Person Knowledge in measuring the students' belief in English speaking compare to other skills. The students' positive attitudes toward speaking, such as motivation and self-confidence, are considered factors that promote the students' knowledge. On the contrary, low self-esteem and speaking anxiety that occurs during speaking practice can be the factors that influence the degree of Person Knowledge and the learners' speaking performance. The PK items in the questionnaire represent the students' belief and confidence that they are familiar and capable of doing the tasks. They believe that speaking is more accessible compared to other language skills. They consider that the speaking problems will raise their curiosity and see them as challenges. As they are speaking, they can manage the pressure and reduce speaking anxiety.

Mental Translation (MT) refers to strategies that learners need to avoid to become fluent English speakers. These strategies include learners' mental translation during speaking practice and are considered inefficient ways of speaking, and only beginners tend to use the strategies. The action of mind translating in speaking often influences fluency because students often pause and carefully continue speaking as they are translating. During speaking, EFL learners produce language expressions that are influenced by their native language, mainly when they use translation. Direct translation in speaking often causes inefficient communication. Some language expressions may not be appropriately used due to language variation, grammatical rules, and vocabulary limitations.

Direct Attention (DA) represents strategies learners use to stay on the topic and focus on the other speakers when communicating. These strategies indicate the learners' effort to maintain good communication and to be able to give appropriate responses. Attention and concentration are valuable aspects of speaking and a good indication of respect and interest. Focusing on the task, asking for further information, and providing proper responses with accurate English expressions are reasonable indications of metacognition in speaking. To give appropriate responses, learners need to use Standard English that is understandable and acceptable. Students can achieve this speaking level if they speak fluently, use well-spoken English grammar, obtain rich vocabulary, and speak coherently.

Planning and Evaluation (PA) are strategies learners use to prepare themselves to plan effective speaking regulation before speaking practice and evaluate the progress they need to achieve. Planning for speaking includes strategies that learners need to prepare, such as setting the goal, thinking about similar topics, and the expression they might need to use. To do this, learners might think about similar texts they have practiced before. Self-evaluation can be done to monitor learners' speaking progress. This strategy stimulates learners to make reasonable attempts to boost their speaking ability by examining their inadequacy and failure.

Problem-Solving (PS) represents strategies the learners use to solve the speaking problems during speaking. These strategies include learners' various efforts to increase their pronunciation, enriching vocabulary, and English expression. The learners' appropriate attitude to maintain the two ways of communication by demanding clarification when they cannot understand others is also considered a problem-solving strategy. The six items in problem-solving

strategies indicate how learners might apply when they face specific problems because English speaking needs to be practiced and exposed regularly, and for English as foreign language learners in Indonesia, this is a challenge.

The result of the internal validity assessment is summarized in table 4. The validation is done by applying principles of the content and construct validity. In reviewing the content validity, the validators refer to actual speaking practice during the class and study the

students' speaking strategies while they are speaking English. The result of the whole validation assessment shows that the value of the substances is above 3.7. Therefore the instrument to measure the metacognitive awareness in speaking is confirmed with high validity. The validation value of each metacognitive factor can be seen in table 4. However, the instrument still requires some minor revision base on the validators' suggestions and recommendations.

Table 4. MASQ Expert validation

Type of Validation	Metacognitive Factors				
	PS	PE	MT	PK	DA
	6 items	5 items	3 items	3 items	4 items
Content Validation	3.6	3.9	3.2	3.8	3.6
Construct Validation	3.7	3.9	3.5	3.5	3.8

The result of the empirical validation can be seen in table 5. The empirical validation is done by administering an online tryout test by utilizing Google form. The participants of this test are 51 EFL students from three different universities in Semarang and Kudus, Central Java, Indonesia. They are first-year and

second-year students who have passed their Basic English speaking. The result shows that most of the items in the questionnaires are valid, and only two items are invalid because their values of Pearson correlation are below the r_{table} (Pearson Correlation Significant). Those two items can be removed or revised.

Table 5. MASQ Empirical Validity

Items	Pearson Correlation	r_{table}	Category
1	.432	.278	Valid
2	.554		Valid
3	.431		Valid
4	.569		Valid
5	.449		Valid
6	.199		Invalid
7	.534		Valid
8	.104		Invalid
9	.399		Valid
10	.392		Valid
11	.378		Valid
12	.278		Valid
13	.385		Valid
14	.471		Valid
15	.425		Valid
16	.395		Valid
17	.566		Valid
18	.388		Valid
19	.482		Valid
20	.605		Valid
21	.514		Valid

A reliability test is done to confirm the consistency of the instrument in measuring metacognitive awareness. An instrument is reliable if it is consistently showing the same result under the same circumstances. The reliability test of the instrument uses Cronbach's Alpha method. Generally, an instrument can be considered reliable if the value of Cronbach α ($\alpha = 0.796$) is higher than the standard Cronbach Alpha ($\alpha = 0.6$). This instrument is confirmed reliable to be used to

measure the learners' metacognitive awareness on speaking.

To find the metacognitive awareness value, the administrator calculates the total score of problem-solving (PS) items, planning and evaluation (PE) items, person knowledge (PK) items, and directed attention (DA) items, minus mental translation (MT) items. By adopting the Likert Scale measurement, each substance in the questionnaire is given a range scale of 1 to 5.

Learners' Metacognitive awareness value $(X) = (PS + PE + PK + DA) - (MT)$

The value of learners' metacognitive awareness in speaking then can be classified into the following levels. By inferring the learners' metacognitive awareness, the

level of the metacognitive awareness can be classified into the following ranges. These metacognitive awareness values are inferred from the mean and standard deviation values calculated based on the scores.

Table 6. MASQ Level

Metacognitive awareness level	Range	Category formulas
High	$X > 69$	$X > (\mu + 1\sigma)$
Medium	$45 \leq X \leq 69$	$(\mu - 1\sigma) \leq X \leq (\mu + 1\sigma)$
Low	$X < 45$	$X < (\mu - 1\sigma)$

Note

σ : Hypothetic Standard Deviation

μ : Hypothetic Mean

4. CONCLUSION

This article described the process of developing and validating an instrument designed to assess the level of EFL learners' metacognitive awareness in speaking. The Metacognitive Awareness Speaking Questionnaire (MASQ) is developed by adapting and adjusting the previous questionnaire (MALQ) developed by Vandergrift & Goh et al. referring to the five metacognitive factors, the writers present 21 items Metacognitive Awareness Speaking Questionnaire (MASQ). These items indicate learners speaking strategies and regulation during speaking practice. The instrument's validity and reliability are measured by administering the internal validity and empirical validity test. In measuring the internal validity, the writers involve four validators to review the construct and content validity. The empirical validity was done by administering a tryout test and calculating the data using SPSS statistics software. The validity test is processed and calculated based on the product-moment correlation technique, and the reliability test adopts Cronbach's Alpha measurement principles. Based on the validity test, two items are invalid. These items need to be revised and to be tested with a more significant number of participants.

Other researchers can use the questionnaire to investigate the influences of metacognition on learners' speaking achievement. Using MALQ to measure the learners' metacognitive awareness is suggested in intervention research done in speaking classrooms. If other researchers want to develop metacognitive awareness instruments, they can design structured interview-based questions and behavior observation-based checklists. The MALQ, interview-based questions, and observation-based checklists will enrich the description of the students' metacognitive awareness.

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