Strategy Use in Oral Communication with Competent Synthesis and Complex Interaction

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Abstract

Strategy use is a critical competence for academic achievement and problem solving in globalised and information-based knowledge economies. It involves skills such as synthesising information from task source materials and elaborating on interlocutors' viewpoints during integrated group discussions. However, evidence from empirical studies on this topic is scarce. We recruited 171 local Hong Kong undergraduate students to participate in an integrated group discussion task in Putonghua as an L2 (i.e., second language) and to complete a strategy use inventory of the task. The students' performances and responses were analysed with multiple statistical methods. The strategy use inventory of the integrated group discussion was validated. Five categories of strategy were identified: active engagement, non-verbal, synthesis, clarification and affective strategies. These strategies significantly predicted task performance (with 19.9% variation), leading to significant improvement in oral production quality. Both the synthesis (the integrative use of information) and active engagement (including elaborating viewpoints) strategies were significantly associated with task performance, which are rarely found in existing oral communication strategy inventories. The participants with high levels of task performance demonstrated significantly more use of the active engagement, clarification and synthesis strategies (with the first two merged in the complex interaction strategy) than those with medium or low task performance levels. The implications of the results are discussed.

Keywords Strategy use, Integrated group discussion, Undergraduate student, Putonghua, L2

Introduction

Good communication skills enable students to build better interpersonal relationships with their teachers and peers, which can lead to success in academic life and life after school (Hargie 2011). In higher education, students are required to construct meaning by inte- grating information from multiple sources and to use their newly learned knowledge when interacting and collaborating with others while addressing complex tasks (Damşa & Ludvigsen 2016). Therefore, competently applying strategies to solve problems during interpersonal communication (Celce-Murcia 2008) is highlighted by both researchers and educators (Bachman & Palmer 1996; Celce-Murcia 2008; Hymes 1967, Hymes 1972). Although some empirical studies on strategy use in oral interactions exist (e.g., Swain et al. 2009), no studies on integrated group discussion (i.e., providing input materials before a group discussion task) have been conducted. We aimed to examine the effect of strategy use during integrated group discussion. In addition, we developed and validated the Inven- tory of Strategy Integrated Group Oral Discussion, which can be used as an assessment instrument in classrooms to provide feedback on undergraduates' speaking strategy use.

Literature Review

Independent and Integrated Group Discussions

When three or more interlocutors communicate their ideas on a topic in a group discus- sion, their performance demonstrates jointly constructed knowledge, actions and activities (Jacoby & Ochs 1995). In the theory of 'interactional competence' in face-to-face commu- nication, Young (2000) comprehensively highlighted six resources of knowledge for partic- ipants that contribute to a discussion: rhetorical scripts, register, turn taking, topical organi- sation, appropriate ways of participating in the practice and transitional devices within the practice itself. Group discussion task features authenticity similar to real communication with a social nature (Gan 2010; McNamara 1996). Researchers have also brought attention to interaction closely related to the responses and feedback from others' opinions before the next initiated turn (Brown & Yule 1983; Gumperz 1999). This interaction results in more negotiation of meaning, more conversational awareness and a more complex output (Taylor et al. 2009), thereby highlighting the critical feature of group discussion. Further- more, it is highly possible to generate creative ideas and engage in higher-order thinking by discussing conflicting viewpoints and resolving setbacks (Zhu 2014; Zhu et al. 2017). This in turn plays a crucial role in deepening oral communication and enhancing problem- solving ability.

Similar to other language tasks, group discussion can be divided into independent group discussion tasks and integrated group discussion tasks. Independent tasks mainly con- cern one specific modality, whereas integrated tasks involve more than one modality in which participants speak or write depending on content from their source materials (e.g., oral recordings and/or written texts) as task stimuli. In their research on integrated writ- ing, Spivey & King (1989) highlighted three processes of 'discourse synthesis': selecting, organising and connecting information in source materials. Discourse synthesis is a critical construct in representing integrated writing (Delaney 2008; Plakans & Gebril 2012; Segev- Miller 2007). We echo these findings with 'citation and synthesis' as one of the four critical skills in the Four Traits of Integrated Writing Competence (Cheong et al. 2018, 2019; Zhu 2005; Zhu et al. 2016). Regarding the integrated writing strategy, discourse synthesis has a significant effect on integrated writing performance (Yang & Plakans 2012).

In this study, the integrated group discussion required interlocutors to participate in dis- cussions with their peers based on the comprehension and use of information from prior source materials. It was assumed that similar to integrated writing, integrated group dis- cussion requires discourse synthesis skills to process the source materials. In recent dec- ades, research on integrated tasks has focused on validating theoretical constructs, practical authenticity and fairness in international and regional

language assessments (Gebril 2009; Swain et al. 2009). Compared with studies on integrated writing, few empirical studies have investigated integrated speaking (Barkaoui et al. 2012; Swain et al. 2009).

Communication Strategy

Communication strategy in language learning and assessment situations is defined as a device for dealing with communication breakdowns among learners and test-takers. It is an essential component (i.e., strategic competence) of the theoretical framework for communi- cative competence (Canale & Swain 1980). Researchers have developed a variety of com- munication strategy models, taxonomies (systematic classifications) and inventories to bet- ter understand the processes of communication learning in the L2 (i.e., second language) acquisition context.

Previous Studies on Strategy Use in Speaking Tasks

An early inventory by Oxford (1990) classified language learning strategies into six catego- ries: memory strategies, connecting one item or concept to another; cognitive strategies, directly manipulating the language materials; compensation strategies, helping compensate for a lack of relevant knowledge; metacognitive strategies, managing the overall learning process; affective strategies, regulating emotions and attitudes towards L2 learning; and social strategies, prompting learners to collaborate with others. Despite this inventory's influence, it has been argued that some strategies (e.g., compensation) represent a type of language use rather than a language learning strategy (Dörnyei 2005). In view of this, Cohen (2003, 2010) distinguished two categories of language strategies. The first category, language learning strategies, is used to improve the knowledge and understanding of the target language. Such strategies include memorising and manipulating language structures. The second category, language use strategies, involves using the language that has been learned. Specifically, he described four types of language use strategies: retrieval strategies, recalling information about language stored in the memory; rehearsal strategies, practising the target language structures; communication strategies, expressing messages that can be understood by listeners or readers; and cover strategies, making up information to avoid appearing unprepared or foolish. From a dynamic perspective, Cohen & Wang (2018) recently emphasised that the language learning strategy is a complex system, in which one specific strategy may not function well in one category only. As Cohen (2010) opined, dif- ferent tasks may activate the use of different strategies. The inventories mentioned above apply to language learning in general and adjustment is required when applying them in specific tasks.

In the speech production model (i.e., knowledge competence and strategic competence) proposed by Douglas (1997), strategic competence consists of three categories. First, metacognitive strategies involve the association between direct cognition and behaviour. Second, language strategies involve addressing language issues, such as evaluating the discourse situation, establishing communicative goals, making a linguistic plan and con- trolling linguistic execution. Third, cognitive strategies involve fundamental processes in the controlling, encoding and retrieval functions. Taking the perspective of dealing with speaking issues, Nakatani (2006) posited nine types of strategies: social affective, fluency- oriented, negotiation for meaning, accuracy-oriented, message reduction and alteration, nonverbal, message abandonment and attempting to think in the target language strate- gies. More recently, in two studies based on Oxford's (1990) language learning strategies, Huang (2016a, b) identified three types of strategies crucial to speaking. First is the cogni- tive strategy, which involves processing inductively, structuring, analysing and organising thoughts. Second is the communication strategy, which involves elaborating, reduction and restructuring. Third is the affective strategy, which involves self-encouraging, calming and comforting. Of these strategies, the communication strategy directly influences speaking performance, whereas the cognitive and affective strategies demonstrate indirect effects.

Some researchers have explored the effects of strategies on speaking performance. Investigating students' performance in the Test of English as a Foreign Language, both Swain et al. (2009) and Barkaoui et al. (2012) suggested that the more language skills used in a task, the higher the frequency of strategy use implemented by the interlocutors. They also found that integrated tasks yielded a wider variety of strategies than independent tasks. However, the relationship between strategy use and task performance varied accord- ing to the complexity of the interactions across different participants' characteristics, tasks (dependent and integrated) and contexts (i.e., test and non-test). In general, no significant relationship has been found between the number of strategic behaviours and speaking test scores. In a related study on the performance on the International English Language Test- ing System, Huang (2013) found that some strategic behaviours demonstrated significantly negative relationships with others (e.g., the communication strategy with the affective, approach or metacognitive strategy). Additionally, regardless of the context, strategy use did not significantly influence speaking task performance. However, in a series of studies, Oxford (2011, 2017)suggested that learning strategies are linked to self-regulated learn- ing, considering it an important factor accounting for the individual difference in learning performance. The contrasting claims of previous studies suggest that whether strategy use affects speaking performance remains unclear.

Framework of Strategy Use in Speaking Tasks

Considering the common strategies identified in previous studies, we propose the Strat- egy Framework for Integrated Group Discussion ('the framework', hereafter) to construct a strategy inventory. The framework consists of four strategy types: metacognitive, cognitive, approach and affective strategies. The metacognitive strategies involve setting goals, estab- lishing plans (e.g., parts, sequences or main ideas) and organising/structuring ideas from the task's source materials (Bachman & Palmer 1996; Douglas 1997; Oxford 1990). The cognitive strategies involve comprehending, selecting and summarising information for communication from source materials (Douglas, 1997; Oxford 1990; Swain et al. 2009). The approach strategies involve roughly referring to the communication strategies in ear- lier studies (Barkaoui et al. 2012; Cohen 2003, 2010; Huang 2016a, b; Swain et al. 2009). The approach strategies in L2 are divided into two categories: psycholinguistic strategies and interactional strategies. The psycholinguistic strategies focus on solving a linguistic problem in communication through self-expression. They include the reduction strategy and the achievement strategy. The interactional strategies focus on the negotiation of mean- ing (Faerch & Kasper 1984; Nakatani 2006). To assess interaction strategy use (including negotiating meaning and elaborating viewpoints by providing explanation/examples and commenting on interlocutors' views in group discussion), Zhu et al. (2017) developed the interaction strategy framework of Chinese as an L1 (i.e., first language) for primary stu- dents. Their framework involves seven types of strategies: expressing actively, asking for opinions, expressing attitude, correcting errors, giving clarification, requesting clarification and using non-verbal language. We base our approach mainly on these strategies. Lastly, the affective strategies involve mentally regulating emotion (Barkaoui et al. 2012; Oxford 1990; Swain et al. 2009) during discussion via self-encouragement, self-calming, self-com- forting and self-talk (Huang 2016a, b). This allows interlocutors to gradually reduce their anxiety and acclimate to the conversational environment.

We identify two issues in previous studies on strategy use during speaking tasks. First, almost all of the studies involved single direction (vs. multiple direction) speaking. That is, they involved individuals answering questions, describing pictures, responding to questions with information provided, proposing solutions and expressing opinions. No study on group discussion among student peers has been conducted. Therefore, the strategy use elicited from the tasks in previous studies does not reflect the interaction competence between peers. Second, few of the studies involved integrated speaking tasks. A few stud- ies used relatively simple and short passages, talks, lectures or conversations. Furthermore, processing materials in tasks primarily involved combining information or summarising key ideas, rather than synthesising information. Nevertheless, in a real-life context in

this globalised era, the requirement for language proficiency is much more complicated. For instance, processing multiple texts with controversial or complementary information, providing one's opinions and arguing them based on synthesised information. Thus, it is important to investigate how undergraduate students demonstrate strategy use in authentic tasks with appropriate source materials provided.

Context of the Study

After the handover of sovereignty in 1997, the Hong Kong government established a new official language goal, known as 'biliteracy and trilingualism'. This goal aims to develop students' abilities in reading and writing Chinese and English and their competence in speaking and understanding Cantonese, English and Putonghua. Putonghua, literally mean- ing 'common speech', is the standardized spoken language which is based on the Beijing Mandarin used commonly in China; and the positioning of Putonghua has been a major issue in language movements in Hong Kong (Li 2017). However, the status of Putonghua in reality is vague. Specifically, it has been defined as an L2 (Li et al. 2016), L1.5 (Lai-Au Yeung 1997) and L1. Theoretically, an L2 is defined as 'the one learned at a later stage, often in their first excursions from the home environment, through media, in schools, and with peers' (Brisk 2005, p. 7). The L1 in Hong Kong is typically Cantonese, which is used as the spoken language among 96.7% of the population (Census and Statistics Department 2016). Although Cantonese and Putonghua both use the Chinese writing system, they are significantly different in terms of their phonology, vocabulary and syntax (Yeung et al. 2013). Therefore, Cantonese speaking students usually have difficulty mastering oral lan- guage skills in Putonghua. Apart from taking a prominent role in primary and secondary education, Putonghua has also become an important component in the Chinese language requirements in post-secondary institutions and the workforce in Hong Kong. However, the lack of clear language planning from the Hong Kong government and the acquisition of English has restricted Putonghua to the classroom as a school subject (Li 2017). Therefore, from a socio-cultural perspective, Li (2017) suggested that Putonghua is an L2, because the language is seldom spoken on a daily basis among the Hong Kong population. Taking these studies into consideration, we regard Putonghua as an L2 in the Hong Kong language context.

Putonghua is mandated as an examinable subject in local primary and junior secondary language curricula, existing as a separate subject from Chinese language in some schools. As an essential part of speaking ability, group discussion has been emphasised in the assessment of Putonghua, Chinese and English subjects. To assess students' abilities to establish and maintain effective communication, groups of four to six students are required to make suggestions, explain choices and argue a position on a given topic (Zhu 2016). In recent years, some undergraduates have faced difficulty in expressing ideas and concepts clearly, elaborating on content and even simply responding in discussions in Putonghua (Chan et al. 2016). Simultaneously, the number of Chinese visitors and job opportunities in mainland China have been increasing rapidly (Li 2017), leading to a steady demand for improved Putonghua proficiency. Therefore, Putonghua is an important component of com- pulsory or elective Chinese communication subjects at Hong Kong institutions.

We developed and validated a strategy inventory of integrated group discussion and then examined strategy use and its relationship with task performance among undergradu- ate students. The following questions were proposed:

(1) Which strategies have significant effects on the integrated group discussion perfor- mance of undergraduate students?

(2) What is the relationship between strategy use and task performance across the con- cerned strategies and participants' discussion performance levels?

Addressing these questions is necessary for enriching theoretical knowledge and design- ing assessment instruments for authentic oral communication (e.g., involving problem solving, integrating

the information provided in tasks and interacting on ideas between peers). It also provides the opportunities to improve language teaching and enhance stu- dents' communication competences, which is an essential skill for modern society in this globalised era.

Methods

Participants

A total of 195 undergraduate students from a mid-sized university in Hong Kong enrolled in a Chinese communication course were sampled. One of the course objectives was to improve the undergraduates' Putonghua speaking ability. Common class activities included providing the students with listening and reading materials on real issues, which they were then asked to discuss using Putonghua in their assigned roles. Participation in this study was voluntary and it was made clear to students that they were not obliged to participate. Ultimately, 171 students completed all of the activities in this study. These participants came from six schools/faculties, including accounting (N = 32), management (N = 25), social sciences (N = 15), construction (N = 43), business (N = 15), applied science (N = 12) and engineering (N = 29). Of the participants, 105 were male and 66 were female. Their mean age was 18.79 (SD = 1.87) years. All of the participants reported Cantonese as their mother tongue.

Instruments

Strategy Inventory of Integrated Group Discussion

The Strategy Inventory of Integrated Group Discussion ('the inventory', hereafter) was drafted according to the framework formulated the above section on 'Framework of Strat- egy Use in Speaking Tasks', including the metacognitive, cognitive, approach and affec- tive strategies. When examining the strategy use in integrated group discussion, the items of the inventory were developed with main references to Swain et al. (2009) and Huang (2016a, b) to reflect the metacognitive, cognitive and affective strategies used in the inte- grated tasks and to Zhu et al. (2017) to demonstrate the interaction strategies used in the group discussions under approach strategies. In the approach strategies, the reduction strat- egies (e.g., leaving a message unfinished) and achievement strategies were excluded from the inventory. These strategies were excluded because after learning Putonghua for at least 9 years in primary and secondary school, the undergraduates had presumably reached an adequate level (Chan et al. 2012). Furthermore, as the instrument is intended for pedagogi- cal use, the omission of negative items is necessary.

The inventory uses a 5-point Likert scale, with 1 representing 'never', 2 representing 'seldom', 3 representing 'sometimes', 4 representing 'usually' and 5 representing 'always'. The drafted inventory contains 24 items. To ensure the appropriateness of the items and the accuracy of language, focus group meetings were held with three experienced lectur- ers. The lecturers held doctorate degrees and had at least 5 years of teaching experience in Hong Kong tertiary institutions. During the meetings, some of the items were deleted, as they were too similar to others or unnecessary. For instance, the item 'I maintain eye con- tact while speaking with someone' was deleted due to its similarity to Item 22, 'I use facial expressions to help express myself when I speak with someone'. 'When others say some- thing that is not right, I ask him/her to correct it' was deleted as it rarely occurred. Rather, other participants would use their own opinions to rebut an incorrect idea. At the same time, Item 4, 'I analyse the information in task source materials (oral recordings and writ- ten texts) deductively', was raised and added. Several other items were amended for coher- ence and accuracy. Finally, the lecturers confirmed that the drafted inventory (23 items) would reflect the students' strategy use in integrated group discussion.

Integrated Group Discussion Task

The Integrated Group Discussion Task (‘the task’, hereafter) aimed to assess the interlocu- tors’ oral interactional communication abilities using content from the source materials (oral recordings and written texts) as the task stimuli. The topic of the task was the discouragement of purchasing of the iPhone 7 in some companies in mainland China. The phone suffered from unexpectedly poor sales, as several domestic mobile phone brands were cheaper and were more customised for Chinese consumers. At the same time, a call to purchase local products emerged, and owning an iPhone was portrayed as a symbol of luxury and fashion. However, this was a very controversial and debatable issue among people. Both complementary and conversational information were provided for students as input materials for the task. These input materials included one aural recording and six reading passages.

The aural recording was in Putonghua. It reported on the design and function of the iPhone 7 and delivered news about the explosion of the Samsung Galaxy Note 7 battery. The total duration of the recording was approximately 3 min. The written texts consisted of six Chi- nese news articles on the topic of smartphones. The articles were titled ‘Prohibiting employ- ees from buying the iPhone 7’ (Passage 1, 405 Chinese characters in length, excluding punc- tuation), ‘Hangzhou company forbids employees with Apple mobile phone’ (Passage 2, 409 characters), ‘Doing everything to buy an iPhone: prosecution, selling kidneys and transporting tiles for money’ (Passage 3, 654 characters), ‘Top 5 mobile phone brands in the first quarter of 2016: Apple, Samsung dropped in rankings’ (Passage 4, 283 characters), ‘Domestic mobile phone may meet its “golden period”’ (Passage 5, 474 characters) and ‘Nomophobia’ (the fear of being out of mobile phone contact, Passage 6, 272 characters). Passages 1 and 2 provided basic explanations about the iPhone 7 incident and served as the main sources of information for the discussion topic. The other passages served as supplementary sources of information. The maximum duration of reading was approximately 10 min.

The task prompt required the participants to select and use the information from the source materials and to discuss the topic in groups of four. First, they were required to comment on the ban on the iPhone 7 and its purpose and then give their own opinion. Second, they were required to suggest how domestic mobile phone companies could attract customers and main- tain their market share. During the task, the participants were asked to first state their opinions individually within 1 min. This was followed by a group discussion, with each student allo- cated an average of 3 min of speaking time.

The scoring rubric for the task consisted of four skill factors as indicators. Indicator 1, Con- tent, consisted of individual interlocutors’ Thesis (V1), Evidence (V2), Argument (V3) and Creativity (V4) in the discussion. It reflected the interlocutors’ correct understanding of the information. Based on this understanding, the interlocutors were then able to express their own ideas and give examples using convincing evidence. Indicator 2, Language Usage, consisted of Coherence (V5), Lexis (V6) and Grammar (V7). It illustrated the quality of the interlocu- tors’ language output. Indicator 3, Oral Expression Form, consisted of Pronunciation (V8), Intonation (V9) and Kinesics/Body Language (V10). It demonstrated the requirement for the language format in oral communication, measuring the interlocutors’ competence in present- ing information in appropriate ways that specifically fit the oral context. Indicator 4, Interac- tion, consisted of Responding (V11) and Directing (V12). It examined the interlocutors’ abili- ties to respond to others’ speech, guide others in topic shifts and converge. Each indictor was marked out of five grades, with an interval of 2 points per grade from the lowest, grade 1 (1 point), to the highest, grade 5 (10 points). The total score for the task was 120.

Both the inventory and the task (topic, materials, prompts and scoring rubric) were verified as appropriate by three experienced lecturers during a focus group meeting. Furthermore, the instruments were piloted with 31 undergraduates in a class, the results of which were used to amend the instruments.

Data Collection and Scoring Task Performance

Data collection in the main study followed several steps. The course teachers first read the task prompt (2 min) and played the aural recording (3 min). Next, the students read the six reading passages and made notes (10 min) for the subsequent discussion. Finally, students gathered in groups of four. Next, each student provided a personal statement on the topic (1 min per interlocuter). Then, all of the students in the group participated in the group dis- cussion (3 min per interlocutor on average) and afterwards they were given 10 min to com- plete the inventory. All of the group discussions were video-recorded for marking purposes and to provide feedback to the participants.

Two raters with Master's degrees and at least 2 years of teaching experience were recruited to mark the task performance using the videos and the scoring rubric. To ensure that the markers used the scoring rubric accurately and consistently, a focus group meet- ing between the markers, the research assistants and the authors of this study was held in which the task, rubric and marking guidelines were discussed in detail. A trial scoring on 5% of the videos was conducted and the results were reviewed. The markers' discrepancies were discussed until consensus on the scoring was reached. One marker marked all videos and another marked three quarters of the videos independently. For the videos that were double marked (N = 129), the average score of the two raters was used as the final score. In terms of the double-marked data, the inter-rater reliability for each variable was as follows: Indicator 1 (Content) ranged from 0.81 to 0.91; Indicator 2 (Language Usage) ranged from 0.78 to 0.84; Indicator 3 (Oral Expression Form) ranged from 0.79 to 0.85; and Indicator 4 (Interaction) was 0.87 for both.

Data Analysis

The scores for the task and responses in the inventory were entered into SPSS 24 and sub- jected to three stages of statistical analysis. The inventory was first validated using explora- tory factor analysis (EFA). During this process, some of the items in the draft inventory were trimmed to ensure that the inventory was well constructed. For the task, descriptive statistics (mean, standard deviation, skewness and kurtosis) were first performed to dem- onstrate data distribution characteristics for further analysis. Subsequently, correlation and multiple regression analyses were conducted to examine the relationship between the strat- egy use based on the inventory and task performance—the results of which also served to validate the inventory. Lastly, we used multivariate analysis of variance (MANOVA) and analysis of variance (ANOVA) to further examine the differences in strategy use across the concerned strategies and participants for each of the task performance levels.

Results

Inventory Validation

Validating the inventory was accompanied by trimming the items in the inventory. Before conducting the EFA, an item-total correlation test was performed that showed that most of the items were within an acceptable range, with the exception of items 1, 2, 8 and 12. These four items had r values below 0.30, indicating a weak association with the scale overall (Field 2013). As a result, they were removed from the scale. For the remaining 19 items, the ratio of cases per variable was approximately 9, meeting the sample size requirement for EFA. First, the factorability was examined for the inven- tory. The Kaiser–Meyer–Olkin Measure of Sampling Adequacy was 0.79, exceeding the commonly recommended value of 0.6. Furthermore, Bartlett's Test of Sphericity was significant, $\chi 2 = 1279.95$, df = 171, $p < 0.001$. In addition, the Measures of Sampling Adequacy for individual variables printed in the anti-image correlation matrix exceeded

0.6. Generally, the EFA was suitable for the data.

To determine the best solution for extracting the factors, multiple EFAs were con- ducted. Factor analysis with direct oblimin rotation showed that the majority of the inter factor correlations were low, with absolute values below 0.30. This suggested that using orthogonal varimax rotation with Kaiser normalisation was more appropriate (Hair et al. 2014). Principal components analysis with varimax rotation was thus performed to estimate the maximum number of factors that might be interesting. Five factors were extracted, as their eigenvalues were all greater than 1 (5.250, 2.400, 1.690, 1.491 and 1.312, respectively). These factors explained 63.92% of the total variance, which is con- sidered satisfactory for this type of research (Hair et al. 2014). The variance accounted for by each of the factors was 27.63%, 12.63%, 8.90%, 7.85% and 6.90%.

In addition, the loading of each item was evaluated at a stricter level because the sample size in this study was under 200. According to Hair et al. (2014), items with loadings lower than 0.45 across factors or those with high loadings (i.e., above 0.45) on more than one factor should be excluded. As presented in Table 1, the loadings of the items on each factor were relatively high. Specifically, they ranged from 0.55 to 0.87 without any cross-loading items.

Internal consistency for each of the scales was examined using Cronbach's alpha. The alphas were moderate: 0.84 for Factor 1 (five items), 0.86 for Factor 2 (three items), 0.70 for Factor 3 (five items), 0.79 for Factor 4 (three items) and 0.59 for Factor 5 (three items). The overall value was 0.85. No substantial increases in alpha for any of the scales could have been achieved by deleting more items. Although the reliability for Factor 5 was lower than the acceptable threshold (0.60) in explorative research (Hair et al. 2014), we retained this factor given the theoretical importance of this dimension and the fact that the value of this factor was very close to the cut off value of 0.60. As shown in Table 1, the inventory is represented by the following five underlying factors.

Factor 1 was primarily associated with Items 14, 15, 17, 13 and 16 (with loadings from 0.605 to 0.827). This reflects that the interlocutors encouraged others to express their thoughts (Items 14, 15, 17 and 16) and to actively express themselves (Item 13) to ensure that the discussion flowed smoothly and more ideas came out. This factor is called the active engagement strategy.

Factor 2 was primarily associated with Items 21, 22 and 23 (with loadings from 0.780 to 0.872). This reflects that the interlocutors used non-verbal language, such as gestures (Item 21), facial expressions (Item 22) and physical posture (Item 23). This fac- tor is called the non-verbal strategy.

Factor 3 was primarily associated with Items 3, 4, 5, 6 and 7 (with loadings from 0.552 to 0.610). This reflects the interlocutors' comprehension of the information based on their deductive reasoning of the main ideas (Item 4), attention to keywords (Item 5) and topic sentences (Item 6) in contexts, in addition to organising (Item 7) and integrat- ing (Item 3) content from oral recordings and written texts. Items 5 and 6 were related to the cognitive strategy, whereas Item 7 was one of the important components for meta- cognitive strategies. The other items in the draft showing respective cognitive and meta- cognitive strategies were not included in any factors, as each had loadings lower than 0.45. This factor is called the synthesis strategy.

Factor 4 was primarily associated with Items 19, 18 and 20 (with loadings from 0.679 to 0.831). This reflects that the interlocutors asked others to speak more clearly by slowing down (Item 19) and by providing complementary information (e.g., example as evidence) or explanations (Item 20) where the interlocutor actively made a clarification

Table 1 Results of the exploratory factor analysis of the inventory

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
14. When I have nothing to say or when I am still organising my ideas and language features, I ask others to	**0.827**	0.061	− 0.012	0.164	0.064
15. I ask others to talk when I have a doubt regarding their speech.	**0.799**	0.264	0.083	0.219	0.028
17. I invite others to express their thoughts.	**0.749**	0.105	− 0.071	0.280	0.297
13. To avoid communication breakdown, I speak when nobody else is speaking.	**0.695**	0.077	0.349	− 0.092	− 0.032
16. To avoid communication breakdown, I ask others to talk when nobody else is talking.	**0.605**	− 0.113	0.004	0.269	0.373
21. I use gestures to help express myself when I speak with someone.	0.155	**0.872**	0.157	0.057	− 0.041
23. I use posture to help express myself when I speak with someone.	0.114	**0.841**	0.176	0.175	0.167
22. I use facial expressions to help express myself when I speak with someone.	0.060	**0.780**	0.304	0.044	0.126
7. I organise the content from task source materials (oral recordings and written texts).	0.196	0.141	**0.750**	− 0.017	0.034
4. I analyse the information in the task source materials (oral recordings and written texts) deductively.	0.315	0.129	**0.610**	0.063	− 0.053
6. I pay special attention to the topic sentences in the written texts.	− 0.054	0.178	**0.602**	0.053	0.070
3. I integrate the information from the source materials (oral recordings and written texts).	− 0.078	0.293	**0.586**	0.218	− 0.042
5. I pay special attention to the contexts that contain key words.	− 0.105	− 0.028	**0.552**	0.387	0.273
19. When I cannot understand what others have said, I ask them to speak more clearly (e.g., by speaking	0.125	0.139	0.067	**0.831**	0.070
20. When I do not understand what others have said, I ask them to provide further information or to explain	0.174	0.133	0.103	**0.813**	− 0.033
18 If others misunderstand what I have said, I make further clarifications or I explain (e.g., 'I did not mean	0.328	0.003	0.181	**0.679**	0.001
10. I reduce anxiety by taking a deep breath or using other techniques.	− 0.019	0.124	0.011	0.014	**0.797**
11. I encourage myself through positive self-suggestion (implying).	0.242	0.162	− 0.063	− 0.114	**0.712**
9. I appreciated my performance in the previous task.	0.170	− 0.097	0.313	0.179	**0.570**

Notes: 1. Extraction method: principal component analysis; rotation method: varimax with Kaiser Normalization. a. Rotation converged in seven iterations. 2. The item num- bers were coded after the focus group meeting

when a misunderstanding occurred (Item 18). This factor is called the clarification strategy. Factor 5 was primarily associated with Items 9,10 and 11 (with loadings from 0.570 to 0.797). This reflects that the interlocutors took a deep breath (Item 10) and used positive self- suggestions (Item 11) and evaluations (Item 9) to gradually reduce their anxious feelings and acclimate to the conversational environment. This factor is called the affection strategy.

Relationships Between Strategy Use and Task Performance

As presented in Table 2, the absolute values of skewness and kurtosis were below 3 and 10, respectively, which is within the scope of normality. All five factors of the inventory were significantly correlated with the total score for the task, although the coefficient val- ues (r = 0.192 to 0.388) were at a weak to moderate level. Meanwhile, the five categories of strategies demonstrated significant correlations with task performance, although the coef- ficients were weak to moderate.

Based on the results of the correlation analysis, we performed a multiple regression analysis using the students' total scores for the task as the dependent variable and the five strategies as independent variables. The Enter method was implemented.

As presented in Table 3, five factors from the inventory accounted for 19.9% of the total variance of task performance, Cohen's f2 = 0.25. This suggests a medium effect on the task. However, only Factors 1 and 3 were included in the regression model. The other three fac- tors did not have a significant predictive power for their performance in the task, despite being significantly correlated, as shown in Table 2.

In-task Strategy Use by Participants with Different Performance Levels

To examine the relationship between strategy use and task performance across different levels of task performance, the participants were divided into three equal groups based on their task performance. The low-level performers (N = 56) scored less than 69 on the task, the medium-level performers scored between 69 and 77.7 (N = 56) and the high-level per- formers scored 77.8 or above (N = 59).

A MANOVA was performed to study the strategy use of the participants with different levels of task performance. Significant effects were evident between the different levels of performers, Wilks'Λ = 0.75, $F(10, 328) = 5.07$, $p < 0.001$, partial $\eta 2 = 0.13$. The results of the ANOVA showed significant differences at all three levels (all values of $p < 0.05$). Fur- ther post hoc comparisons with the LSD method revealed that high-level performers used Factor 1 (active engagement), Factor 3 (synthesis) and Factor 4 (clarification) significantly more than both the medium-level and low-level performers. The medium-level performers used Factor 2 (non-verbal) and Factor 5 (affection) significantly more than the low-level performers. (Table 4).

Discussion

We investigated the strategies used in a multi-directional interaction between students, along with access to prior information. The major findings also include the establishment of the strategies' relationships with integrated group discussion performance, thereby con- tributing to an evolving area of language strategy studies.

Table 2 Correlations between strategy use and task performance

	Mean	SD	Skewness	Kurtosis	1	2	3	4	5	6
1. Total score in task performance	73.06	13.13	0.04	1.04	1					
2. Factor 1 (Active engagement)	3.06	0.74	− 0.18	− 0.24	0.295**	1				
3. Factor 2 (Non-verbal)	3.56	0.78	− 0.22	− 0.06	0.256**	0.271**	1			
4. Factor 3 (Synthesis)	3.57	0.52	− 0.22	0.34	0.388**	0.251**	0.438**	1		
5. Factor 4 (Clarification)	3.00	0.79	0.05	− 0.17	0.197**	0.432**	0.260**	0.346**	1	
6. Factor 5 (Affection)	3.00	0.75	− 0.06	0.16	0.192*	0.340**	0.216**	0.194*	0.151*	1

The students' mean values of the five inventory factors were computed by dividing the total score on each factor by the number of items for the respective factor Notes: ** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed)

Table 3 Prediction of task performance based on strategy use

	Unstandardized beta (B)	Standardised beta (β)	t	*p*
Factor 1 (Active engagement)	0.67	0.19	0.19	**0.022**
Factor 2 (Non-verbal)	0.34	0.06	0.77	0.441
Factor 3 (Synthesis)	1.56	0.31	0.31	**0.000**
Factor 4 (Clarification)	− 0.09	− 0.02	− 0.20	0.843
Factor 5 (Affection)	0.33	0.06	0.06	0.449
F(5, 165)	8.20			
R^2	0.199			

Five Strategies Used in the Integrated Group Discussions

Following a series of EFAs, five categories of strategies emerged from the inventory produced after the integrated group discussion. The active engagement strategy and clarification strategy were found to be critical strategies in multi-directional and complex interaction tasks. According to the results of regression analyses, the active engagement strategy (Factor 1) helped the students continuously express their ideas while avoiding communication breakdown. More importantly, it helped uphold a highly interactive atmosphere and deepen the discussion by allowing the students to build on each other's ideas and elaborate on their own perspectives. This can hardly be found in previous oral communication strategy inventories. Importantly, in Confucianism-dominated communities, such as Hong Kong, students are usually required to think more and speak less. The traditional culture discourages young people from expressing their thoughts, as they are always perceived as less knowledgeable and to maintain good interpersonal relationships by not opposing others' views (Au & Yeung 2014; Wang & Torrisi-Steele 2015; Zhu et al. 2017). The clarification strategy (Factor 4) helped the interlocutors negotiate meaning (Nakatani 2006, 2010; Naughton 2006) and elaborate on the meaning of certain points. The findings in this study are consistent with strategies found in other speaking inventories, such as appealing for assistance in Tarone (1980), requesting clarification in Naughton (2006), interacting in Celce-Murcia (2008) and giving and requesting clarification in Zhu et al. (2017).

The above strategies (active engagement and clarification) may form a complex interaction strategy under the approach strategy. Their purpose is established in this study as follows: (1) negotiating meaning as a common function, as indicated by most studies on

oral communication, and (2) elaborating viewpoints by providing explanations/examples and commenting on interlocutors' talk in group discussions. Few studies have highlighted this purpose. For instance, the strategy is related to actively expressing ideas, asking for opinions and expressing attitudes in an L1 learning context (Zhu 2014; Cheong et al. 2018) and to asking follow-up questions in an L2 learning context (Naughton 2006). In togetherness, active engagement and clarification constitute towards sustained and in-depth conver- sations collaborated between interlocutors. This complex interaction strategy highlighted as an important strategy in this study contributes to our understanding of interaction tasks. Further research may advance from this milestone to investigate students' behaviour in var- ious situations and conditions.

Table 4 Strategy use of the participants with different performance levels on the task

	Factor 1 active engagement		Factor 2 non-verbal		Factor 3 synthesis		Factor 4 clarification		Factor 5 affection	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Low	2.81	0.78	3.28	0.76	3.34	0.50	2.90	0.85	2.76	0.78
Medium	3.01	0.60	3.58	0.72	3.50	0.43	2.83	0.76	3.13	0.64
High	3.36	0.73	3.82	0.78	3.84	0.51	3.26	0.69	3.11	0.78
Total	3.06	0.74	3.56	0.78	3.57	0.52	3.00	0.79	3.00	0.75
F(2, 168)	8.98***		7.37**		15.92***		5.17**		4.52*	
Post hoc comparison	H > M, M = L		H = M, M > L		H > M, M = L		H > M, M = L		H = M, M > L	

Notes: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The synthesis strategy (Factor 3) is an important combined component of cognitive strategy and metacognitive strategy and a featured strategy for integrated speaking. It involves the processes of selection, organisation and connection by comparing, contrasting and summarising information and then using it in language output. In this strategy, comprehending and using information is consistent with cognitive strategies (Douglas 1997; Oxford 1990; Swain et al. 2009), while organising content based on source materials echoes metacognitive strategies, such as organising or structuring ideas (Bachman & Palmer 1996; Douglas 1997; Oxford 1990). As Barkaoui et al. (2012) pointed out, speaking strategies used in independent tasks and integrated tasks are different and cognitive strategies are comparatively distinct. This means that the function of the metacognitive strategy is relatively weak. In their studies on integrated writing, Spivey & King (1989) and Yang & Plakans (2012) suggested that incorporating synthesis strategy into a strategy inventory of integrated group discussion would be appropriate.

The non-verbal (Factor 2) and affection (Factor 5) strategies are general strategies in speaking. The non-verbal strategy complements what interlocutors have said or clarifies their points (Damico et al. 2008; Zhu et al. 2017). This can make the interlocutors' expressions more attractive and help them express meanings that cannot be easily conveyed through words (Rodriguez & Rodríguez 2014). The affection strategy alleviates the tension during a discussion, especially in an examination context. Students must take certain meas- ures to reduce their anxiety in such situations, which may include mental control to engage oneself during communication (Barkaoui et al. 2012; Swain et al. 2009).

Overall, the strategies identified in this study are sub-categories of communicative strategies. Although certain strategies are generic to speaking tasks or language learning, synthesis strategies enable students to synthesise and use the information from source materials, which illuminates the importance of this skill in integrated tasks. Furthermore, the active engagement and clarification strategies highlight the multi-directional interaction between interlocutors. Both act as critical features of integrated discussion tasks and are achieved through application.

Effects of Strategy Use on the Integrated Group Discussions

The relationship ($r = 0.408^{**}$, $p < 0.01$) between strategy use and the overall task performance was significant. Strategy use accounted for 19.9% of the variance in the task performance, indicating that the predictive power of strategy use on the task performance was statistically significant. This positive result contributes to the validation of strategy use in L2 tasks (e.g., Anderson et al. 1991; Yang & Plakans 2012). Previous studies have reported inconsistent results on the effect of strategy use on speaking performance. First, it has been argued that strategic competence is very important in communicative language use (Bachman 1990; Cohen 2003, 2010; Oxford 1990). In an empirical study, Yoshida-Morise (1998) revealed the directional relationship between strategy use and proficiency levels in oral interview test situations. Huang (2016a, b) indicated that strategy use could better distribute attentional resources and help students

perform tasks with improved results. However, as previously noted, the instruments used in Huang (2016a, b) were simple speaking tasks, such as reading aloud, answer- ing questions and describing pictures. We extend the research to reveal the effectiveness of strategic competence in a relatively complex speaking task, namely in an integrated group task. Second, in Swain et al. (2009), Barkaoui et al. (2012) and Huang (2013), strategy use did not lead to a significant quality change in oral production, regardless of context. One potential reason for this result is that these studies included psycholinguis- tic strategies, especially reduction strategies, whereas we excluded such strategies from our study. Furthermore, we also assume that with the complexity of the task design in our study, the students required strategy use to overcome the challenges faced during the task. Future research should consider the authenticity of task design while simultane- ously taking care of the task validity.

When we compared the different strategies, although each strategy used had a sta- tistically significant correlation with task performance, only the active engagement and synthesis strategy could significantly predict task performance. As the multi-collinear- ity in each regression analysis was acceptable, these two strategies contributed to better performance in the integrated group discussion compared with the other strategies. In contrast, the synthesis strategy (B = 1.56) had the greatest effect on the task. The follow- ing explanation may enhance our understanding of the task. First, the synthesis strategy benefitted the students by allowing them to acquire and integrate information quickly. This further assisted them in constructing a blueprint of the content and a foundation for discussion. It also shows that the cognitive ability to meld information from the prior materials identified in this study is consistent with research on other integrated language tasks (Cheong et al. 2018; Zhu et al. 2016). Second, using the active engagement strat- egy allowed the audiences to understand the interlocutors' stances and build on each other's ideas. Thus, we confirm the results of our previous study (Zhu et al. 2017) on the significance of active engagement in Chinese-speaking countries.

Scholars have also highlighted that the effectiveness of strategic use is related to stu- dents' language proficiency. Differential strategy use was found across participants with dissimilar language proficiency (e.g., Phakiti 2003). In this study, the relationship between strategy use task performance varied across the participants' performance. The high-performing participants used significantly more of the active engagement and clari- fication (collectively called the interaction strategies) and synthesis strategies than the medium-performing participants. The three strategies were all related to directly construct- ing content in the group discussion. Although the clarification strategy was not a signifi- cant predictor of task performance, it was one of three strategies that the high-performing students used significantly more frequently than the medium-performing students. Greater attention should be paid to this strategy when examining the constructs of the strategies.

Relationships Between Strategies

The correlations between the sub-strategies in the integrated group discussions were all significant at the 0.05 or 0.01 levels. This is not consistent with the results of other studies (e.g., Barkaoui et al. 2012; Swain et al. 2009). Furthermore, this confirms that the metacognitive strategy was significantly negatively correlated with the approach strat- egy and the communication strategy, whereas the cognitive strategy and the communi- cation strategy were significantly negatively associated with each other. Huang (2013) suggested similar results. Poulisse and Schils (1989) pointed out a key theoretical blind spot, in that the use of oral communication strategies might as well be task- and item- specific rather than solely correlated to proficiency levels. One reason for a strategy's positive effect on task performance is that we do not include psycholinguistic strategies (reduction strategies and achievement strategies). They are usually used by interlocutors with weak language abilities (Oliver 1998, 2002).

Implications and Limitations

An integrated group discussion task is usually part of a course assessment, class activities or pedagogical methods. The outcomes of this study have implications for language teaching and assessment. First, we provide empirical evidence of the positive relationship between strategy use and task performance. Students' speaking ability can be developed by enhancing their strategic competence. Hong Kong students have regularly reflected that their learning in classrooms is not applicable to comprehensive, real life, interactional tasks (Zhu & Wu 2013). Furthermore, the dynamic and complex nature of strategy use had war- ranted for the teachability of these strategies, with considerations of the sociocultural set- tings (Oxford 2011, 2017). In view of these opinions, more attention should be paid to the active engagement, clarification and synthesis strategies during instruction, and scaffold the learners through the forethought, performance and self-regulation stages (Oxford 2011, 2017). Second, the inventory in this study can serve as a peer- or self-evaluation tool for students to monitor the strategies used in various contexts and to thereby develop their inte- grated group discussion abilities. Third, the interaction and synthesis strategies should be considered when designing integrated group discussion tasks. Other related task require- ments, as suggested by Nunan (1989), can be applied simultaneously: authenticity, task continuity, real-world focus and problem solving. Only with sustainable efforts to engage students in complex and meaningful tasks can their competence in oral communication be cultivated and their language proficiency be improved (Zhu 2014).

Although we validated the use of integrated group discussion and enriched the literature on speaking strategies, we must address some of the limitations to our study. First, the number of items with factors in the inventory was too limited to ensure that the inventory was administrated feasibly in regular classes. According to Brown (2006), factors that are based on only a few items may have determinacy problems and are therefore not stable enough to be replicated across different samples. Second, the small number of participants and the single task studied might have affected the generalisability of the findings. Third,

only quantitative data were collected. This may indicate a weakness in terms of data triangulation. To achieve a more reliable outcome, further work can be carried out by implementing other complementary qualitative approaches (e.g., interview and thinking aloud) to further examine the effects of strategy use in integrated group discussions.

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