Video Segment Comprehension Strategies:

Male and Female University Students

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Abstract

The purpose of the study was to investigate video comprehension strategies used by male and female university students. The researcher designed a video comprehension strategy questionnaire including cognitive, compensation, and memory categories. Totally, 168 Taiwanese university participants completed the questionnaire. The quantitative results demonstrate that first, regarding three categories, both males and females utilized memory strategies most frequently. Second, among 18 strategies, females used concrete referents in video segments most frequently, and for males, to retrieve world knowledge. Third, most males were unlikely to repeat the utterances orally; most females do not use their domain knowledge. Fourth, out of 18 strategies, four memory strategies and three cognitive strategies demonstrated significant differences between male and female strategy employment. Fifth, there existed positive and negative correlations between individual strategies and male video comprehension; three strategies were positively related to female video comprehension. Instructional recommendations were presented for effective video comprehension instruction.

Keywords: Comprehension instruction, Cognitive strategies, Compensation strategies, Memory strategies, Gender, Video segments

1. Introduction

To foster language learners' comprehension of text presented in the target language, one of the most effective tools of language instruction is multimedia. In the field of second language (L2), instructors have been making efforts to integrate technology into their pedagogical theories and hence design learning situations in the classroom similar to those that naturally occur in the world of the target language (Sherman, 2003). With regard to this goal of conveying a rich form of realism, L2 comprehension teaching curriculum aims at using authentic teaching materials, stressing the importance of making drills contextually appropriate and placing an emphasis on meaningful learning in the classroom. The reviewed literature on language learning strategy research demonstrated that most reading comprehension research focused on how language learners utilize strategy to comprehend verbal and written text on paper. In contrast, little research investigated learners' strategy application in situations when they view visualized text containing verbal and nonverbal information on video. The area of video comprehension strategies has thus not been developed fully. The current study emphasizes the need to integrate visualized material (video) into the curriculum of teaching English as a foreign language (EFL), especially in the context where English native speakers and authentic materials are not sufficient. The current study was to investigate comprehension strategies used by EFL learners when viewing video via computers.

2. Literature review

2.1 Computer-Based Video Instruction

Educational historians probably will note that the decades of the 1950s, 60s, and 70s were a period of intensive research on the use of media to stimulate learning in more or less formal classroom settings (Cohen, Ebeling, & Kulik, 1981). More recently, there is an increasing tendency to apply multimedia tools in learning and teaching to equip students with the competence to handle real world challenges and provide teachers with a variety of resources (Flanagan, 2005; Marchionini, 2008; McHale, 2008; McLellan, 2008). By multimedia, Mayer (2005) defined it as information displayed through various processes including text, audio, graphics, animation, and video. Moreover, advanced multimedia tools which possess stronger ability, for example, without the limitation of time and place, may replace traditional teaching and learning methods gradually, especially in the settings without sufficient teaching resources (Buckley & Smith, 2007). In general, the research results demonstrated positive effects of multimedia on learning (Mayer, 2001, 2005).

Technology plays an essential role in assisting language learning directly. Bulter-Pascoe and Wiburg (2003) provided

the computer programs to English language learners from elementary school through college in the U.S.A. Upon reflection of research outcomes around computer technology in language learning programs, it was acknowledged that tremendous potential of technology for learning, especially second language (L2) learning. Furthermore, computer-based strategy training was developed to enhance language learners' L2 text comprehension and strategy use and the effect of computerized instruction is significant (Dryer & Nel, 2003; Sung, Chang, & Huang, 2007).

Research in second language acquisition has clearly suggested the need of comprehensive input in order for second language learning to take place. With this perspective, the instruction and teaching material should be comprehensible to the learner (Krashen, 1985, 2002). Traditionally, most language teachers have used their facial expressions, intonation and gestures to convey the meaning of the text, or even have relied on various kinds of still pictures, realistic objects to lead the learner to formulate concrete concepts of the text. However, what instructors have traditionally done is quite limited to transfer the abundant information contained in the teaching material into comprehensible input. Computer-based video segments can thus address the problem.

Video viewing can enhance understanding of concepts that are intricate to verbally explain (White, Easton, & Anderson, 2000). Video with its visual and animated features can be a powerful addition to second language acquisition. In the field of research on multimedia education, Ciccone (1995) asserted that video was useful for visualizing processes, could clarify complex ideas and make them easier to remember. Thus, visuals that provide concrete referents for concepts play an essential role in fostering learners' comprehension (Heinich, Molenda, & Russell, 2002). With these documented benefits, videos can be used in academic contexts for various instructional purposes. Moreover, with the astonishing advancement of technology, video recordings can nowadays be played via computers. Also, computers are the tools popular within regular family units and in academic-area classrooms. Chapelle (2005) enumerated a number of benefits of computer-assisted language learning (CALL) and proposed suggestions for integrating CALL into interactionist theories of L2 learning and teaching. Thus, language learning and teaching through videos via computers appears promising.

2.2 Comprehension Strategy Research

2.2.1 Language Learning Strategies

Strategy usage in learning languages has received a great deal of attention from both researchers and language teaching professionals in the past two decades. With vast amounts of empirical research, language learning strategies (LLSs) consistently have emerged as a particularly prominent research path. There is research evidence that suggests that the use of LLSs is related to language performance (Dreyer & Oxford, 1996; Park, 1997) and that strategies can be taught (Vance, 1999).

Previous studies on LLSs have indicated that strategy use is significantly related to variables such as cultural setting, instructional context, and type of language performance required (Chamot & El-Dinary, 1999; Oxford & Burry-Stock, 1995). Moreover, findings from several prominent research studies have also indicated significant variation in learning strategy preferences based on individual variables including gender, academic background, age and target language proficiency (Green & Oxford, 1995; Park, 1997; Lee & Oxford, 2008; O'Malley, et al., 1985).

Among these individual variables, gender has been shown to be a significant variable in strategy use in learning (Brown, 2007) but gender-difference research has not been fully reported in second language learning, needless to say in the field where technology is applied to assist second language learning. Gurian and Henley (2001) pointed out there indeed existed developmental and structural differences between males and females in terms of perspectives on brain-based research and listed a number of categories of male-female difference to consider in various educational settings. However, in reality, "it lacked sensitivity and clarity about what individual girls need and what individual boys need" (Gurian & Henley, 2001, p. 9). In regard to Oxford's LLSs research, some empirical studies show that women are different from men in language learning strategy usage, with women generally applying more strategies than men, but not in all cases (Dreyer & Oxford, 1996; Ehrman & Oxford, 1989; Green & Oxford, 1995; Lan & Oxford, 2003; Lee & Oh, 2001; Oxford & Ehrman, 1995). Oxford, Nyikos and Ehrman (1988) summarized four studies concerning gender differences in language learning strategies. According to Green and Oxford (1995), 15 out of 50 strategies on the Strategy Inventory for Language Learning (SILL, Oxford, 1990) showed differences between women and men in terms of strategy usage. Oxford and Ehrman's (1995) study also revealed that women used strategies more frequently than men. More recently, Lan and Oxford (2003) found that with Taiwanese children's SILL, out of 50 strategies there were eleven significant differences in strategy usage between girls and boys, with these differences in favor of greater strategy use by girls.

As to the four skills of listening, speaking, reading, and writing, males and females differed from each other in strategy usage. For example, Bacon's (1992) study confirmed that men and women used listening strategies differently. Maubach and Morgan (2001) reported that among high school learners of French and German, men engaged in more spontaneous speaking strategies whereas women use organizational strategies in written work more effectively.

In contrast to these significant gender differences, there are also studies demonstrating ambiguous distinction in strategy use between males and females (Dadour & Robbins, 1996; Oh, 1996; Park, 1999). For example, it is problematic to distinguish whether males or females favor metacognitive strategies. Zimmerman and Martinez-pons (1990) discovered that girls used metacognitive strategies, such as goal-setting, planning, keeping records, and monitoring, more than boys. In contrast, Phakiti (2003) established that male university students in Thailand reported significantly higher use of metacognitive strategies than females. Furthermore, Kaylani (1996) asserted out that girls were different from boys in strategy use not because of gender variable only, but because of gender in relation to language proficiency. The research conducted by Lee and Oxford (2008) also revealed that gender in isolation did not have significant impact on strategy usage; however, gender showed significant interaction effects accompanying with other variables, such as major, English proficiency, self-image and conception of importance of English. Therefore, the effects of gender on video comprehension strategy usage required further examination.

From the above gender comparison studies, several gaps were perceived. First, the results are limited to how two groups of learners apply strategy to comprehend traditional paper-printed materials. Instead, the contrast between male and female strategy use in comprehending video segments had not been investigated yet. Second, the research results reported statistic differences between males and females in strategy usage but did not present why boys and girls use strategies differently in terms of the scientific evidence that documents the many biological gender differences. For example, girls' brains mature earlier than boys'; girls have better verbal abilities and rely mainly on verbal communication; boys rely chiefly on nonverbal communication (Gurian, & Henley, 2001).

2.2.2. Video Comprehension Strategies

The important role of LLSs in the teaching and learning process has been argued by LLS experts (Cohen, 1998; O'Malley & Chamot, 1990; Oxford, 1990). Thus there are various ways to classify the strategies. Among them, Oxford (1990) divided LLSs into two classes: direct strategies (memory, cognitive, compensation) and indirect strategies (metacognitive, affective, and social). Another widely accepted LLS taxonomy is O'Malley and Chamot's (1990) classification based on cognitive theory. Using students of Spanish and Russian as participants, O'Malley and Chamot (1990) identified three types of strategies such as, cognitive, metacognitive, and social/affective. Considering the two major LLS taxonomy, this study would like to adopt Oxford's direct strategy taxonomy. The reasons are that first, as Cohen (1998) pointed out that it can be problematic to deduce from the two distinctions, cognition and metacognition, that it might not be possible to precisely differentiate between cognitive strategies and metacognitive strategies for certain summarizing tasks. To avoid this vague classification, the present study focused on cognition factors examining how learners processed information. Second, learners are the center of strategy usage and the study should focus on how learners directly utilizes and remembers information in video segments. As a result, direct dimension of strategies were examined in which cognitive, compensation and memory strategies were further investigated when English learners viewed video segments. Following Oxford's definition (1990), compensation strategies, such as guessing or inferencing, allow the learners to use the language despite large gaps in their linguistic knowledge, especially limited vocabulary knowledge; memory strategies, such as grouping or reviewing, assist learners to store new information and retrieve previously stored information; cognitive strategies, ranging from repeating to analyzing expressions to summarizing, enable learners to understand and use a new language through various media.

The comprehension of videos is somewhat like the comprehension of printed text with verbal and nonverbal signals. Earlier strategy research paid considerable attention to the strategies manipulating verbal information, such as vocabulary, reading and listening strategy research. Video segments contain much richer sources of information than are available in printed material (Bransford, et al., 1990). In video segments, background music, scenes of cities, objects, gestures, facial expressions and affective states, and so on, always accompany the speakers' utterances. In order to differentiate from earlier studies, the current study emphasized how learners applied nonverbal information to comprehend the video. The strategies included in this questionnaire can be those involved learners in using nonlinguistic or paralinguistic cues to comprehend the content of video segments, or applying nonverbal signals, to take notes or form mental representations.

Students can vary in their abilities to interpret visuals (Heinich, et al., 2002). Some students can successfully understand the content of video segments whereas others may confront comprehension failures. To have a significant improvement in understanding the video, the student needs to learn the expertise of video comprehension strategies. Unfortunately, from the reviewed research, there are few studies focusing on comprehension strategies of viewing video segments. The outcomes of this current study are expected to provide valuable knowledge about English learners' video comprehension strategies and also significantly contribute to English instruction. The purpose of the study is to investigate video comprehension strategies used by male and female university students. The four research questions addressed are:

1) Which category of video comprehension strategies do male and female participants use to comprehend video-based material most and least frequently?

2) What individual video comprehension strategies do male and female participants use to comprehend video-based material most and least frequently?

3) Are there any differences between female and male participants' video comprehension strategy use?

4) What is the relationship between the respondents of both genders' strategy usage and video comprehension?

3. Methodology

3.1 Participants

In total, 168 students studying English courses in a public Taiwanese university participated in this study. The sample included 99 male and 69 female students whose mother language was Chinese. The students' English study duration ranged from six to ten years. Students who had been in English speaking countries for over one year were excluded from this study. Furthermore, all participants were volunteers and represented a range of ability in English.

3.2 Research Instruments

3.2.1 Topic Interest Questionnaire

The topics which the participants felt interested in were selected. The rationale was that earlier research demonstrated the positive effects of the topic interest on the participant's reading comprehension (Carrell & Wise, 1998). A topic-interest survey was conducted to establish which topic the participants felt interested in. As a result, three topics with the highest accumulated scores were selected.

3.2.2 Video Segments

Three video segments were selected from CNN news 2006 video archives, which are part of an online program issued by a local language learning publishing company in Taiwan. The length of the segments ranged from 335 words to 370 words and the speed varied between 143 words to 162 words per minute.

3.2.3. Video-Viewing Follow-up Tests

There were three follow-up tests pertaining to measuring the participants' video comprehension. Each test followed the same format: participants answered five multiple-choice questions and ten gap-filling questions according to the content of the assigned video segment. The total score of each test was 15 points, with one correct response worth one point. The alphas for three posttests were .81, .82 and .78 respectively.

3.2.4 Video Comprehension Strategy Questionnaire

Upon close examination of the strategy categories from previous studies (O'Malley & Chamot, 1990; Oxford, 1990; Vandergrift, 1996; 1997), the author developed a new questionnaire to investigate the participant's video comprehension strategy usage. This questionnaire was administered with four intact classes. The internal consistency of the translated version of the newly developed questionnaire was tested (α = .81). The questionnaire contained three major strategy categories and 18 items: compensation category (five strategies), memory category (eight strategies) and cognitive category (five strategies). See Appendix for the video comprehension strategy (VCS) questionnaire.

3.3 Research Procedure and Data Analysis

The primary aim of the study was to investigate the strategies used by male and female learners to understand the content of English video by means of the strategy questionnaire survey. This study contained three sections: first, selecting the target video segments, second, video-viewing in class, and third, filling out the VCS questionnaire. In the first section the topic interest questionnaire was conducted to select the target video segments. In the second section, the computer-based video viewing started. Without any instructional activity, participants viewed one segment per week in an English class. Viewing time for the video segment was around 30 minutes. After the participants finished viewing one clip, they completed a video-viewing follow-up test. This video viewing section lasted for three weeks. In the third section, the participants filled out the VCS questionnaire after viewing three video segments.

Quantitative analysis was conducted using the statistical Package for the Social Science (SPSS 15.0). In total, there were 168 pieces of questionnaire data collected and analyzed. The participant's response to each item was added up and divided by the total number of participants and multiplied 100% to receive the percentage scores. With percentage scores, the mostly and least used individual strategies and strategy type can be summarized. Furthermore, independent *t*-tests were further employed to examine whether there were significant differences between male and female participants in strategy use. Pearson correlation analysis was conducted to examine whether males and females' strategy use is related to their video comprehension respectively. This is a two-tailed test with α = .05.

4. Results and Discussion

In this section, these quantitative results have been presented in five facets: strategy category, mostly used strategies, least used strategies, differences in strategy usage, and relationships between males and females' strategy usage and their video comprehension.

4.1 Video Comprehension Strategy Category

[Table 1 near here.]

First of all, with regard to strategy categories, the taxonomy of video comprehension strategies proposed by Oxford (1990) proved to be useful for describing the strategic behaviors applied by these EFL learners. As shown in Table 1, male participants appeared to utilize primarily memory strategies (Mean = 3.8, SD = 1.66), followed by compensation strategies (Mean = 2.25, SD = 1.3) and cognitive strategies (Mean =1.84, SD = 1.12). For female participants, memory strategies (Mean = 3.21, SD = 1.34) were also used most frequently, followed by cognitive strategies (Mean =2.17, SD = 1.11) and compensation strategies (Mean = 2.08, SD = 1.06). There were significant differences between males and females in the application of memory and cognitive strategies. Males significantly used more memory strategies than their female counterparts whereas females significantly applied more cognitive strategies than males.

Based on Kintsch's (1998) comprehension model of multiple representations, the present study investigated video comprehension strategies in three phases: compensation, memory and cognitive. The results confirm that the participants flexibly applied these types of strategies to handle verbal and nonverbal information in the video segment. This study found that memory strategies were the most frequently employed approach for males and females in the computer-based video viewing situation. This may be attributed to Taiwanese culture wherein, most students prepared for the entrance examinations to enter senior high schools and universities. They recite details in textbooks to achieve high scores on exams; as a result, they were trained with memory strategies and utilize them frequently in their studying.

4.2 Mostly Used Video Comprehension Strategies

The discussion of the mostly used strategies includes the ones in each strategy category and among 18 strategies. The strategies ranked with the highest percentage scores by this group of participants are the frequently used. In general, among 18 strategies, the most used strategy for females (65%) is Item 5 to utilize physical objects and direct activities in video segments, and for males (70%), Item 7 to retrieve world knowledge. Among the five compensation strategies, Item 5 is the strategy used by most male and female participants. That is, respondents of both genders tended to use concrete situational referents to guess the meaning of unknown words with over 60 percent of males and females agreeing (see Figure 1). This can likely be attributed to the learning process, where learners have to make inferences from what people say, and on the basis of what happens in the environment and the mind. When acquiring the meanings of words, learners begin with the concrete (Heinich, Molenda, & Russell, 2002; Steinberg & Sciarin, 2006). The referents in the video segments included the scene and props. They were the objects that could be directly observed in the physical environment and thus caught male and female participants' attention at first glance. Among the six memory strategies, Item 7 is mostly used by males and Item 12, by females. That is, 70% of males liked to refer to knowledge and experience gained from life; 64% of females preferred to connect the scene with Chinese words or phrases (see Figure 2). The mostly used cognitive strategies generally used by males and females are Item 16 and Item 18 respectively. That is, 65% of males preferred to catch key concepts in the video and 62% of females tended to understand the details (see Figure 3).

[Figure 1 near here.]

[Figure 2 near here.]

[Figure 3 near here.]

Gurian and Henley's opinions (2001) about gender contrast in learning style may explain these results. One difference in strategy use is that males and females use different reasoning processes and logic thinking styles. For example, males tended to be "deductive in their conceptualizations, starting their reasoning process frequently from general principle" whereas females prefer "inductive thinking, adding more and more to their base of conceptualization" (p.44). It is also true that males like "abstract arguments, philosophical conundrums, and moral debates about abstract principles" (p. 45). Instead, females would like to "have things conceptualized in usable, everyday language, replete with concrete details" (p. 46). A second difference is that males ask for evidence for other's claim but females generally pay more attention to "the plethora of details in a lesson or conversation" (p. 46). Concerning the results found in this study, males and females tend to use different strategies to comprehend video materials in light of their different learning styles.

4.3 Least Used Video Comprehension Strategies

Within each section of compensation, memory and cognitive, the lowest percentage scores are regarded as the least used strategies. An overall view of 18 strategies, the result shows that Item 15 with 14 % was males' least frequently used strategy; Item 8 with 17% was females' least used strategy. The findings suggest that most males are unlikely to repeat the utterances orally; most females do not use their domain knowledge. Regarding compensation strategies, both male and female participants ranked Item 3 as the least used strategy, with 30% of males and 21% of females (see Figure 1). That is, the respondents of both genders did not like to use background sounds or music to comprehend the content.

This is probably because in most English classes in Taiwan, most students prepared themselves with the skills to do paper-pencil tests. They were seldom asked to do oral practice. Furthermore, two male participants stated that they viewed video segments to learn some vocabulary so they simply focused attention on the subtitle to identify unfamiliar words. Under such conditions when they viewed video segments, they involved themselves mostly in the task of reading written words rather than perceiving it as a listening task. Among eight memory strategies, Item 13 is the least used strategy for males and Item 8, for their female counterparts. That is, only 28% of males replayed the video and only 17% of females used domain knowledge to understand the content (see Figure 2). Some females expressed that the topics of these video segments were not related to their majors so they did not rely on their academic background knowledge. As to cognitive strategies, both male and female participants ranked Item 15 as the least utilized strategy. The findings suggest that neither females nor males liked to repeat a series of sounds pronounced by the speakers. In addition, outcome shows that Item 14 was another strategy least frequently used by females (see Figure 3). That is, most females did not like to use graphic, or numerical forms to write down the concepts, either. According to Gurain and Henley's study (2001), females prefer concrete examples, and do not like to use abstract coded language to take notes.

4.4 Differences between Female and Male Strategy Usage

[Table 2 near here.]

Out of 18 strategies, seven strategies demonstrated significant differences between male and female strategy employment (see Table 2). Within the seven significant strategies, four of them are Memory strategies; the other three are Cognitive strategies. None of the Compensation strategies achieved any significant gender differences.

For significant results of the three memory strategies, Items 6, 7, and 8, the percentage scores of male participants are significantly higher than female participants'. That is, most males tended to use their personal experience, world knowledge and domain knowledge to comprehend the content of video segments. On the other hand, the results of Item 12 indicated that the percentage scores of female respondents are significantly higher than male respondents'. That is, females linked the scene and the sound in the video with Chinese words, phrases or sentences more frequently than males. In regard to three cognitive strategies, the percentage scores of females are all significantly higher than their male counterparts. These statistically significant results show that female participants obviously employed Item 14 and Item 15 more often than males, but with only 32% of females using graphs and numbers to write down their concepts and repeating a stream of utterance, while less than 20% of males utilized the two strategies. For the two cognitive strategies, the statistically different results are distinguished but the low percentage scores are regarded as low frequency. It cannot be concluded that males and females diverge significantly in using the two strategies. However, when it comes to distinct strategy use, male and female learners really are different. This finding suggests that a rather small number of males liked to utilize the two cognitive strategies to comprehend the video. For the last significant result, with 45% of males selecting Item 18 to comprehend the video segment, over 60% of females liked replaying the segment to have a further understanding of the details. This result has been explained in the above section of mostly used strategies. Males and females are different in deductive and inductive reasoning, and abstract and concrete reasoning (Gurian, & Henley, 2001).

4.5 Relationships between the Respondents of Both Genders' Strategy Usage and Video Comprehension

Pearson correlation analysis was first conducted to examine whether there was significant relationship between male and females' strategy use and their video comprehension. For male participants, the correlation results confirm that there were two significant correlations between the use of individual strategies and male participants' scores of the video comprehension test, with Item 12 ($r = -.28$, $p = .005 < .05$) and Item 16 ($r = .25$, $p = .01 < .05$). There exist positive and negative correlations between individual strategies and male video comprehension. These findings suggest that males did not achieve high scores in the video-viewing follow-up test when they used Chinese to remember the image and sound; however, the more main ideas in the video males comprehended, the higher scores they achieved.

Concerning female participants, the results show that there were three significant correlations between females' individual strategy use and their scores of the video-viewing follow-up test. The corrections of the three items are positive, with Item 11 ($r = .30$, $p = .013 < .05$), Item 13 ($r = .31$, $p = .01 < .05$) and item 14 ($r = .28$, $p = .02 < .05$). This result demonstrates that some strategies are positively related to female video comprehension. These findings suggest that the more English used by females to connect with the image and the sound in the video, the more times females replay the video clip, and the more often females use graphs and numbers to write down key concepts, the higher scores they achieve in the video comprehension test.

5. Conclusion

In general, the results of this study demonstrate that gender differences are reflected in the ways that males and females use different strategies to understand English video segments displayed on computer. Differences in strategy usage are not obstacles to prohibit both genders from comprehending, learning or retrieving information successfully in the text. Instructors should "help the learners become comfortably and fully themselves – accepting their differences, celebrating

their natural strengths, and aiding them in compensating for their natural weakness" (Gurian, & Henley, p. 19). Video comprehension strategies discussed in this study were not the exclusive preserves of either gender group, but could be learned by the opposite sex of learners who had not discovered them on their own.

Armed with the general results of the study, some instructional recommendations are presented. First, concrete referents in video are useful to comprehension. Teachers can demonstrate some specific props and settings to students before video viewing. By doing so, students may activate their knowledge relative to the targets and thus pay attention to them during the process of viewing. After the viewing, instructors may repeat specific scenes to reinforce learners' content memory. Further, the teacher should select a video containing sufficient concrete referents.

Second, world knowledge plays an important role in the process of learner video comprehension. Kintsch (1998) conceptualized comprehension as a paradigm for cognition and stated that all cognitive processes require knowledge. Speaking of comprehensive understanding of video, knowledge hence plays an important role. Teachers should select video segments with familiar topics to the students. In the process of viewing such video materials, students may have abundant knowledge resources to consult with.

Third, key concepts provide effective comprehension. Thus it is recommended teachers train the students the strategy of grasping key points. For strategy reinforcement, teachers may conduct several activities themed at key concepts, such as listing for key concepts or writing a brief summary following video viewing.

Fourth, it is recommended that language professionals improve learners English speaking and listening skills. Teachers could expose learners to an English verbal and aural environment. This is because video segments are partly featured with sound. Afterwards, learners could practice pronouncing English words, reading aloud a sentence and repeating the stream of sounds produced by native English speakers. With such practice, they can thus understand video clips better.

Fifth, language professionals should provide pre-viewing activities introducing the speakers' backgrounds and their relationship. By distinguishing the social relations between speaker and receiver, learners may predict the content of the segments. The different relationships may demonstrate various speaking styles and contents. For example, a conversation between teacher and student can be a formal discourse related to topics on academic spheres; conversely, a conversation between acquaintances can be informal and leisurely with topics on personal relationships.

The current study results add new knowledge in the field of LLS research and computer-based education, and generates new opportunities for professional dialogue about the understanding of text comprehension via video segments. Further research is recommended to find a holistic view of how language learners comprehend text in aural and written formats using computers as a major media. Therefore, the researcher would like to conduct qualitative research exploring the process of how video viewers comprehend verbal (spoken and written words) and nonverbal (pictorial images) information.

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Appendix

Video Comprehension Strategy Questionnaire

The purpose of the questionnaire is to investigate the strategies you used to comprehend the video segment. Please put a check mark, ∨ , in the box if you used the strategy.

□ 1.Using tone of voice (intonation or stress) and pauses in an utterance.

□ 2. Using a speaker's facial expressions, body language, and hand movements.

□ 3. Using background sounds or music in the video.

□ 4. Using relationships between speakers in an oral text.

□ 5. Using concrete situational referents.

□ 6. Referring to personal life experience.

□ 7. Referring to knowledge gained from experience in the world.

□ 8. Using domain knowledge gained in academic situations.

□ 9. Analyzing the theme (such as business, traveling, technology).

□ 10. Using mental or actual pictures or visuals to represent information.

□ 11. Trying to remember the scene or the image with English.

□ 12. Trying to remember the scene or the image with Chinese.

□ 13. Replaying the video to read and listen to the words.

□ 14. Use graphics or numerical forms to writing down the concepts.

□ 15. Repeating a series of sounds pronounced by the speakers.

□ 16. Catching the main ideas of the clip.

□ 17. Reviewing the scene for main ideas.

□ 18. Reviewing the scene for details.

Table 1. Descriptive statistics of males and females' application of strategy category

Strategy Category	Male (n = 102)		Female (n = 66)		t	p
	Mean	SD	Mean	SD		
Compensation	2.25	1.30	2.08	1.06	0.88	0.38
Memory	3.80	1.66	3.21	1.34	2.43	0.01*
Cognitive	1.84	1.12	2.17	1.12	-1.83	0.07*

* p < .05

Table 2. Means and Standard Deviations of video comprehension strategies of males and females

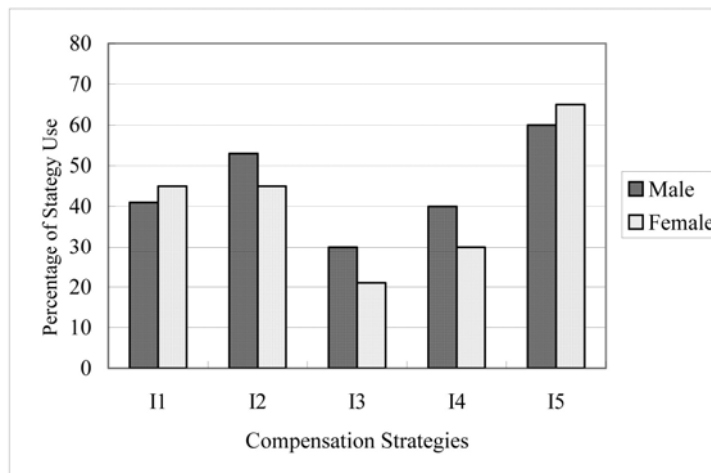| Strategy Category	Item	Male (n = 102)		Female (n = 66)		t	p
		Mean	SD	Mean	SD		
Compensation	I1	0.41	0.50	0.45	0.50	-0.54	0.59
	I2	0.53	0.50	0.45	0.50	0.95	0.35
	I3	0.30	0.46	0.21	0.41	1.31	0.19
	I4	0.40	0.49	0.30	0.46	1.30	0.20
	I5	0.60	0.49	0.65	0.48	-0.69	0.49
Memory	I6	0.58	0.50	0.35	0.48	2.97	0.00*
	I7	0.70	0.46	0.52	0.50	2.39	0.02*
	I8	0.35	0.48	0.17	0.38	2.67	0.01*
	I9	0.58	0.50	0.48	0.50	1.19	0.24
	I10	0.47	0.50	0.38	0.49	1.17	0.24
	I11	0.38	0.49	0.38	0.49	0.05	0.96
	I12	0.46	0.50	0.64	0.49	-2.25	0.03*
	I13	0.28	0.45	0.30	0.46	-0.26	0.80
Cognitive	I14	0.19	0.39	0.32	0.47	-1.97	0.04*
	I15	0.14	0.35	0.32	0.47	-2.87	0.01*
	I16	0.65	0.48	0.58	0.50	0.93	0.36
	I17	0.42	0.50	0.33	0.48	1.14	0.25
	I18	0.45	0.50	0.62	0.49	-2.17	0.03*

* p < .05

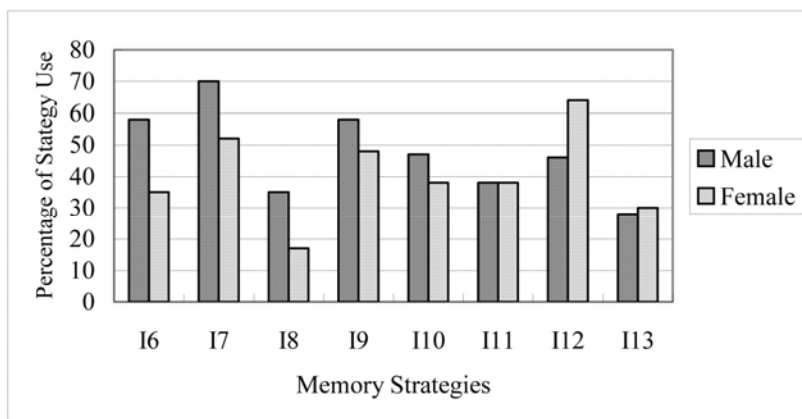Figure 1. Frequency of male and female compensation strategy usage

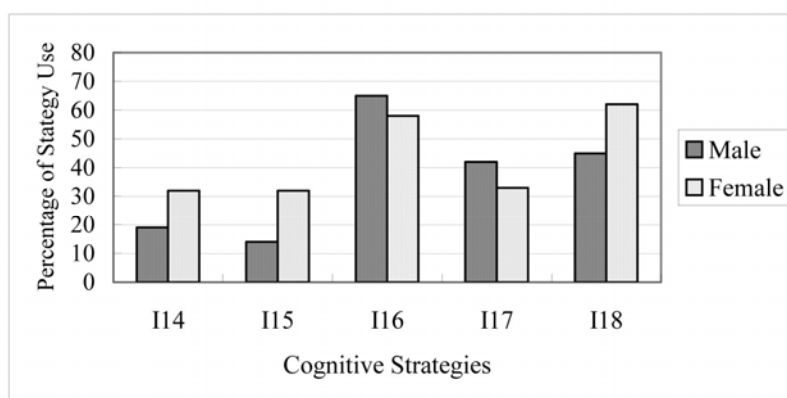Figure 2. Frequency of male and female memory strategy usage

Figure 3. Frequency of male and female cognitive strategy usage