Textual enhancements and comprehension with adult readers of English in China

Cindy Brantmeier
Washington University
United States

Aimee Callender
Auburn University
United States

Xiucheng Yu
Northeast Normal University
China

Mark McDaniel
Washington University
United States

Abstract

The present study utilizes texts from social psychology to examine the effects of textual enhancements on reading comprehension with 185 native adult Chinese speakers learning English in China. Participants read two different vignettes, either with or without an adjunct. Each adjunct consisted of a 'what' question along with instructions to either 'pause and consider' or 'pause and write.' Participants also completed written recall, sentence completion, multiple-choice, and a topic familiarity question. Across passages, findings revealed significant effects of passage version on comprehension as measured via recall and sentence completion and no significant effects of passage version on multiple-choice questions. Participants scored almost the same on recall and sentence completion for versions with no adjuncts and versions with 'pause and consider' adjuncts, and they scored significantly lower on these assessment tasks for the version with pause and write adjuncts. Participants scored the same on multiple-choice questions for all three versions of both passages.

Much second language (L2) reading research has emphasized strategy training in both English as a Second Language (ESL) and English as a Foreign Language (EFL) contexts (Anderson, 1991; Block, 1992; Carrell, 1989; Hosenfeld, 1977; Liontis, 1999; Pritchard, 1990; Sarig, 1987). Reading strategies are generally considered to be the comprehension processes that readers use in order to make sense of what they read, including skimming, scanning, guessing, recognizing cognates and word families, reading for meaning, predicting, activating general knowledge, making inferences, following references, and separating main ideas from supporting ideas (Barnett, 1988). Obviously, some strategies may be more useful than others for different types of reading texts and tasks (see Brantmeier, 2002, and Pang, 2008 for a full review of research on strategies in the second and foreign language contexts).

One specific strategy that has been given a lot of attention in first language (L1) reading research is the insertion of adjunct questions in reading materials. Adjunct questions are questions inserted in the text that require the reader to stop and answer questions about specific concepts in the text. Recently, adjunct questions have been researched with learners of Spanish in the USA (Brantmeier, Callender, & McDaniel, 2011), and the researchers suggested that this type of research should also be conducted with language learners outside of the USA. Adjunct questions are a simple strategy that has been used to improved comprehension in L1 (Callender & McDaniel, 2007) and it is possible that the benefits may extend to English language learners (ELL). It is argued that reading is the most necessary skill for readers of an L2 for both academic and professional reasons. Because China has the largest population of learners studying English in the world (Pang, 2008), better practices for reading instruction in EFL are of critical and timely importance. To date, it appears that no research has specifically examined the effects of adjunct questions on the English reading comprehension of native Chinese readers.

Currently, there is a debate regarding the teacher-centered versus learner-centered ESL classroom in contexts outside the Western educational models (Haley & Ferro, 2011). The foundation of this debate centers on the instructional practices utilized within the classroom during class time. It aims to facilitate a wider range of learning strategies and to develop the ability for students to learn independently and with greater autonomy (Jin & Cortazzi, 2011). The present study utilizes a text adjunct that promotes independent and autonomous learning, embedded questions. The present investigation explores whether or not this textual enhancement, in the form of inserted questions, aids comprehension for readers engaged in independent, silent reading when the text is in a foreign language.

Literature Review

First Language Research on Embedded Questions

Research on L1 reading comprehension and study strategies has investigated the effects of various types of questioning techniques on text comprehension and memory (Callender & McDaniel, 2007; Hamaker, 1986; Peverly & Wood, 2001; Seifert, 1993; Walczyk & Hall, 1989). Adjunct questions, questions that are inserted within the text that readers must answer during reading, typically improve comprehension for L1 readers. *Embedded questions* are adjunct questions placed within the text that ask about specific concepts stated in the text and can be

answered by information solely stated in the text (Hamaker, 1986). The benefits of these questions are well established and adjunct questions are a ubiquitous learning tool (Bing, 1982; Callender & McDaniel, 2007; Dowaliby, 1990; Hamaker, 1986).

It is hypothesized that embedded questions improve comprehension by providing a starting point or anchor for the mental representation of the text (Callender & McDaniel, 2007). L1 reading comprehension requires that a reader engage in multiple processes to construct a mental representation of the text (Kintsch, 1988). The mental representation includes three levels: a surface-level representation that contains a verbatim representation of the text, a text-based level of representation that includes the meaning explicitly stated in the text, and a situation model, a representation that includes prior knowledge as well as the meaning conveyed in the text. Constructing a situation model is a difficult task for some readers; however, text adjuncts that require the reader to answer questions about the text can improve comprehension (i.e., the resulting situation model) for readers when reading a text in their L1 (Callender & McDaniel, 2007; Hamaker, 1986; Peverly & Wood, 2001; Seifert, 1993; Walczyk & Hall, 1989).

Previous research suggests that lower level readers have difficulty with creating a coherent situation model; specifically, they tend to include irrelevant information in the situation model and may not include the necessary relevant information. The gains in comprehension observed by these readers when answering embedded questions provide evidence that the questions allow the readers to focus on the relevant information (that should be included in their mental representation), and discard (or at least reduce the focus on) irrelevant information (Callender & McDaniel, 2007).

Although questions that require higher-level thinking (e.g., generating inferences or accessing prior knowledge) typically produce larger gains on comprehension tests than questions that can be answered from information explicitly stated in the text (Hamaker, 1986), these fact-based embedded questions have been shown to be particularly beneficial for lower ability L1 readers. It is unclear whether these processes generalize to reading in a L2. Thus, this experiment sought to investigate the effects of these types of questions on L2 comprehension.

Second Language Research on Textual Enhancements

Textual enhancements include additions to reading passages and the two widely used tools for textual enhancement of L1 reading are inserted questions and analogies. The use of analogies, or comparisons between an unfamiliar concept and a familiar concept, is widely utilized for L1 reading with children (Vosniadou & Ortony, 1983; Rumelhart & Norman, 1981). Creating a comparison between something that is already understood by the reader and a new concept in the text allows for better understanding of the text than if such comparisons are not used. Likewise, analogies have proven to be an effective tool for adults to acquire new scientific concepts in L1 reading (McDaniel & Donnelly, 1996). Some research has also investigated whether or not analogies assist the adult L2 reader but to date findings contradict L1 studies (Brantmeier, 2005; Hammadou, 2000).

With university level L2 students of French, Hammadou (2000) examined whether analogies help unfamiliar L2 texts become easier and she found that analogies did not aid the L2 reading

comprehension process as measured via written recall. Brantmeier (2005) utilized the same scientific passages as Hammadou (2000) and found that, with adult learners of Spanish, the addition of analogies to scientific passages did not compensate for a lack of subject knowledge. The analogies did not improve performance on any of the three assessment tasks that Brantmeier (2005) included to measure comprehension.

Given the lack of significant effects of analogies on L2 reading comprehension, researchers are beginning to examine other types of enhancements such as embedded questions. To date, research on the effects of embedded questions on L2 reading comprehension is limited. Al-Shehri and Gitsaki (2010) utilized short, online readings with intermediate level ESL learners and found that an integrated format, where questions were inserted in the text, enhanced L2 reading comprehension more than a format that consisted of questions that appear after the online reading. It appears, to date, that only one study has specifically examined the use of embedded questions in L2 setting (Brantmeier et al., 2011). Brantmeier et al. (2011) found that native English speakers studying Spanish at a university in the USA did not improve performance on written recalls and multiple-choice questions with two types of adjunct questions, 'what' questions and 'why' questions. 'What' questions targeted specific concepts (What is…?), whereas 'why' questions required higher-level thinking (Why does … happen?). Mean recall scores for both the embedded 'what' and elaborative 'why' questions were almost the same for each passage, whereas the mean recall score for the version without adjuncts was lower (although the differences were not significant). One possibility for the lack of significant effects is that the participants were not required to write their answers to the 'what' or 'why' questions whereas in studies of embedded questions with L1 passages participants were required to write out their responses. The authors suggested that future research should examine the differences in comprehension for inserted questions that require written answers and those that do not, as task type appears to be an important variable when investigating reading adjuncts.

L2 Reading Research and Background Knowledge

It is widely understood that background knowledge influences L2 reading comprehension (Grabe, 2009; Hudson, 2007; Koda, 2005); the process of making meaning while reading may vary for readers because of individual differences in prior knowledge. Since the 1980s, the effects of background knowledge on reading comprehension have been investigated with participants from around the world who are learning English and participants within the USA learning foreign languages (Brantmeier, 2002; Brantmeier, 2003; Bügel & Buunk, 1996; Carrell, 1984a, 1984b; Hudson, 1982; Johnson, 1981; Mohammed & Swales, 1984; Pritchard, 1990; Schueller, 2009; Steffensen, Joag-dev, & Anderson, 1979; Young & Oxford, 1997). Scholars agree that the reader's prior topic knowledge should definitely be accounted for across stages of acquisition and across languages when conducting research. Consequently many practitioners activate prior knowledge through pre-reading discussions held during class time. Additional techniques that address how to aid readers outside of the classroom remain unexplored.

First and Second Language Research on Comprehension Assessment Tasks

For some time now scholars have suggested that a variety of assessment tasks are needed to measure L2 reading comprehension (Alderson, 2000; Bernhardt, 1991). Bernhardt (1991; 2011)

argues that the written recall task offers the best depiction of comprehension as there is no tester interference with predetermined comprehension questions. For the written recall task, readers are asked to write down as much as they can about what they just read without looking back at the passage. With this type of task, there is no tester interference and no retrieval cues are provided or predetermined. It has also been suggested that the recall be completed in the reader's native language to prevent a test of writing rather than reading (Alderson, 2000; Bernhardt, 1991; Lee & Ballman, 1987; Wolf, 1993).

Despite the fact that recall appears to be the best way to measure comprehension, two other tasks continue to be popular means of assessing reading comprehension: multiple-choice questions and sentence completion. Multiple-choice questions are the most popular method, and with these items the answers are either right or wrong. It is the practice of L2 reading researchers to provide four possible responses for each multiple-choice question with one correct answer and three plausible distracters (Alderson, 2000; Bernhardt, 1991; Wolf, 1993). Another widely used task to measure reading comprehension is sentence completion: Sentence completion items consist of a part of a sentence that needs to be completed by the reader. Researchers predetermine correct answers and at times some sentences may include several correct answers. Retrieval cues are often included in the part of the sentence that is given to the reader.

As in L2 research, studies of L1 reading comprehension have found differences in performance based on the type of task or test used to assess comprehension (Ozuru, Best, Bell, Witherspoon & McNamara, 2007). Although Ozuru et al. (2007) found that performance on multiple-choice and open-ended items is correlated ($r = .30$ for multiple-choice questions that tap the reader's text based representation), the correlation is far from perfect. This is likely due to differences in the processes the reader uses to answer the question.

In L1 reading research, scholars contend that multiple-choice tasks require the reader to use recognition processes (see Yonelinas, 2002, for a discussion of recognition versus recollection), comparing the possible answers against the mental representation that has been constructed. It is agreed that recognition tasks are generally limited in that they assess the reader's text-based representation rather than the more complex situation model (Long & Prat, 2002; Long, Wilson, Hurley & Prat, 2006). Additionally, performance on multiple-choice tests can be affected by various test-taking strategies such as response elimination in which readers are able to automatically eliminate some answers because the answers are implausible. Furthermore, because the answers are provided, readers will answer some questions correctly due to chance (Coleman, Lindstrom, Nelson, Lindstrom, & Gregg, 2010; Martinez, 1999). Because of these factors, multiple-choice items are generally not as sensitive to difference in comprehension as open-ended assessments (McNamara & Kintsch, 1996).

Open-ended assessments such as recall require the reader to rely on recollection processes (as there are minimal or no cues present within the question to aid memory), which tap into the reader's situation model (Long & Prat, 2002; Long et al., 2006). Indeed, numerous studies investigating text adjuncts have found that text adjuncts produce better performance on open-ended assessments (short answer, recall, application questions) compared to no adjunct, but these improvements in performance are not observed on multiple-choice questions (Callender & McDaniel, 2007; Callender, McDaniel & Wildman, under review; McDaniel, Howard & Einstein,

2009; McNamara & Kintsch, 1996). Thus, open-ended assessments provide a more reliable measure of comprehension compared to multiple-choice questions.

Research Questions

Given the findings from L1 studies that examine the effects of embedded questions along with the mixed results of L2 studies that investigate the same phenomena, the following research questions guide the present study:

1. For L2 Chinese readers of English, do embedded questions influence text comprehension as measured via written recall, sentence completion, and multiple-choice?
2. Do the effects of embedded questions vary by format 'pause and consider;' 'pause and write'?

Participants

The original data pool consisted of 185 participants. Only those students with the following criteria were included in the final data analysis: (1) students whose native language was Chinese, and (2) students who completed all tasks during data collection. The present investigation utilized a convenient sample of participants. Participants (24 male and 161 female) were third-year students majoring in English at a large university in the northeastern region of China. Their ages range from 19 to 24 and they were classified in the language program as upper-intermediate-level learners. Participants were enrolled in a required Advanced Reading course for English majors. The objectives of this course were to develop the learners' abilities to analyze and paraphrase readings and, through the introduction of different cultural knowledge, rhetorical devices and writing features, cultivate the learners' abilities to participate in trans-cultural communication. An appreciation of authentic text written by native speakers of English was also fostered throughout the course.

Before taking the present course, all participants had passed a national proficiency test called TEM-4 (Test for English Majors, Band 4) administered by the Ministry of Education of China. During the past two years at the university participants were enrolled in various reading-related classes, such as Intensive Reading (six hours a week for freshmen and four hours a week for sophomores), Extensive Reading (four hours a week for freshmen and sophomores) and Journal Reading. In all of these courses, various genres of writing are introduced and students are required to read extensively outside of class. A reading list is provided before each semester and tests of vocabulary and comprehension of the readings are conducted on a monthly basis to check that learners complete and comprehend the required readings.

Methods and Procedures

Data Collection Procedures

Data collection was conducted by one of the authors at a university in northeast China toward the

end of the fall semester of 2010. All participants attending the Advanced Reading course agreed to take part in the experiment and each signed a consent form. All participants preferred points to be added to their course grade instead of monetary compensation for the experiment. Since all students attended the experiment, the third author agreed to give 10 marks to each of the participants as part of their daily performance. All participants completed the following instruments in this order for each reading (each participant read only one version of each reading): demographic questionnaire, reading passage, written recall, sentence completion, multiple-choice questions, and topic-familiarity questionnaire.

No details about the experiment were provided to participants when they were invited to participate. The researcher was present during data collection sessions to ensure that students did not look back at any previous pages while reading and completing all tasks. Data collected from five participants were eliminated from final analysis because these participants did not finish all the questions (all of them were female students). The final population sample consisted of 180 participants.

Reading Passages and Embedded Questions

Two different passages were utilized in the present study and they were modified from readings taken from a social psychology textbook (Callender & McDaniel, 2007). The passages for the present study consisted of approximately 1200 total words. The first reading detailed first impressions with corresponding details about the primacy effect and schemas. The second reading passage described implicit personality theories and included explanations about attribution theory. Each passage was examined for variables of text difficulty, namely passage length, total number of sentences, and total number of embedded clauses. Table 1 includes text factors by passage and, as the descriptive statistics reveal, the first passage contained about 120 words less than the first passage, but the passages contained an equal amount of sentences and embedded clauses. In the end, the passages differed in both content and length.

Table 1. *Text difficulty by passage*

Passage Content	Length	Number of sentences	Number of embedded clauses
Passage One: first impressions, the primacy effect, and schemas	525 words	21	15
Passage Two: implicit personality theories with a detailed explanation of attribution theory	646 words	22	16

Three different versions of each passage were included and participants received one of the three versions. Version One included no inserted questions. Version Two included inserted 'what' questions that required learners to pause and consider, and Version Three included inserted 'what' questions that asked learners to pause and write. The researchers utilized 'what' questions instead of 'why' questions after consulting with professors of English at the university in China. The English professors thought that an initial study of this kind should only use 'what' questions because Chinese learners of English may not be accustomed to analyzing or thinking critically

about readings as they initially read, as they are usually asked to report what they read in oral or written form. The researchers of the present study recognize the potential issues in the implementation of educational models from one culture to another and therefore utilized only the inserted "what" questions for the present investigation.

The embedded 'what' questions were implemented such that participants were instructed to either 'pause to consider' or 'pause and write.' In the first condition, participants thought about the answers to the questions whereas participants in the second condition wrote down their answers to the questions. These two conditions were included in the study to assess how the thinking and/or writing processes affect comprehension. When the reader pauses to consider that written output is not required but when the reader pauses and writes, there is an emphasis on written output. The process of producing the written output could affect comprehension and so it is important to conduct an empirical test to address this question. The participants in the study were not given a specified amount of time to complete the readings, so time on task was not considered a factor.

It is hypothesized that the use of embedded questions should enhance comprehension, but it is well documented that test type may also impact the results of a comprehension test. Embedded questions were constructed for each passage that addressed main ideas and concepts presented in the text. For example, the first passage, which was about first impressions and the primacy effect, included questions such as "What is the primacy effect?" All texts and adjunct questions were presented in English; however, for the 'pause to write' questions, participants were asked to write in Chinese to ensure a test of reading rather than writing (Alderson, 2000). To be consistent with prior research that utilized the same passages (Callender & McDaniel, 2007), there were 2 questions per reading. The questions were placed after every 2-3 paragraphs, even though the second passage was longer by 120 words. Participants encountered the questions as they read through each passage (see Appendix A for full passages along with corresponding adjuncts and comprehension tasks).

Comprehension Assessment Tasks

As previously explained, the present study utilizes three different comprehension assessment tasks: written recall, sentence completion and multiple-choice questions. The written recall asked the reader to write down as much as possible about what they just read. The instructions for the recall were written in both English and Chinese; however, participants were instructed to write the response in their native language, Chinese. Both the sentence completion and multiple-choice instructions and items were written in Chinese. There were 9 total sentence completion and multiple-choice items for the first passage and there were 11 total sentence completion and multiple-choice items for the second passage.

Topic Familiarity

Each participant completed a topic familiarity questionnaire that asked students how familiar they were with the topic of each passage. Answers ranged from (1) I was really familiar with this topic, to (5) I was not familiar with this topic at all. The questions were first written in English and then translated into Chinese by native Chinese speakers who are also professors of English

(Appendix A also includes the topic familiarity questionnaire). This questionnaire was administered to ensure that there were no differences between groups in prior knowledge of the subject, as prior knowledge affects comprehension.

Scoring of Written Recall, Sentence Completion, and Multiple-Choice

Prior investigations have demonstrated that the pausal unit is the most effective way to score written recalls for L2 reading (Bernhardt, 1991; 2011). Through data-driven evidence, Bernhardt (1991) revealed that the pausal unit system taps the same reading comprehension as the hierarchical weighted system and that the pausal unit rubric is more efficient. According to Bernhardt (1991), a pausal unit is a unit or entity that during normally paced oral reading has a pause on each end of it and each pausal unit represents a unit for scoring. For the present study, the pausal units for the text were determined by two native speakers of English. The readers read the English passages out loud in order to establish a list of possible pausal units. For Passage One the total number of pausal units was 26 and for Passage Two the total number of pausal units was 24. The written recalls for each participant were read by two different native Chinese speakers to check for the presence or absence of units. The total number of correct pausal units was tabulated for each recall. The inter-rater reliability index was 97%. As detailed in Bernhardt (1991; 2011), a recall that contains approximately 50% of the pausal units is considered a high-level achievement. Findings for recall in the present study are reported in the next section. For sentence completion all plausible answers were discussed and agreed upon by the two raters. For multiple-choice questions there was only one correct answer.

Results

Topic Familiarity

Participants' degree of familiarity for each passage was analyzed. (The lower the mean score the more familiar the subjects were with the passage topic). Table 2 lists means, standard deviations, and ranges for reported familiarity with the topic of each passage. As indicated, the mean score for Passage One (first impressions) was 3.1 'somewhat familiar' and the mean score for Passage Two (implicit personality theories) was 3.7 'somewhat familiar' or 'not very familiar.' Separate one-way analyses of variance (on each of the three assessment tasks) were calculated in order to determine effects of topic familiarity on comprehension, with topic familiarity as the independent variable and comprehension the dependent variable. No significant effects for topic familiarity on comprehension, as measured via all three assessment tasks, were found ($p > .05$).

Table 2. *Descriptive statistics for topic familiarity ratings by passage*

	N	Range	Minimum	Maximum	Mean	*SD*
First impressions	185	4	1	5	3.09	0.67
Implicit personality theory	185	5	0	5	3.65	0.81
Valid *N* (listwise)	185					

Comprehension of Passage One by Adjunct and Task

Performance on each of the tasks (recall, sentence completion, and multiple-choice) were analyzed as a function of passage version (no adjunct, pause and consider adjunct, pause and write adjunct; see Tables 3 and 4 for descriptive statistics). Data were submitted to a repeated measure ANOVA with an alpha level of .05 (see Table 5 for the results of the ANOVA.)

For the recall task there was a significant effect of version (*p < .05*) on Passage One (primacy effects) such that Version One with no adjunct (*M* = 23; *SD* = 13) and Version Two 'pause and consider' adjunct (*M* = 24; *SD* = 11) resulted in better performance that Version Three 'pause and write' adjunct (*M* = 17; *SD* = 10). Table 4 provides percentages for all three comprehension tasks, showing that the recall scores were well above 50%. In fact, performance was close to 90% (or above), which indicates that readers could be considered high-level achievers.

Table 3. *Descriptive statistics for Passage One and Two by textual enhancements and comprehension assessment tasks*

	Version	Mean	*SD*	N
Recall Passage One	1	23.49	13.34	63
	2	23.66	11.32	61
	3	16.90	9.57	61
	Total	21.37	11.90	185
Sentence completion Passage One	1	7.27	1.72	63
	2	8.26	1.54	61
	3	5.84	1.27	61
	Total	7.12	1.80	185
Multiple-Choice Passage One	1	7.37	1.38	63
	2	7.59	1.35	61
	3	7.75	1.32	61
	Total	7.57	1.35	185
Recall Passage Two	1	21.78	13.08	63
	2	23.74	12.05	61
	3	14.34	8.20	61
	Total	19.97	11.97	185
Sentence Completion Passage Two	1	8.76	1.72	63
	2	8.67	2.06	61
	3	7.56	1.73	61
	Total	8.34	1.91	185
Multiple-Choice Passage Two	1	8.16	1.73	63
	2	8.13	1.75	61
	3	7.79	1.79	61
	Total	8.03	1.76	185

Note. N=185. Passage One is about primacy effect. Passage Two is about implicit personality theory. Version 1 is No Adjuncts, Version 2 is Pause and Consider, and Version 3 is Pause and Write.

Table 4. *Percentages for Recall, Multiple-Choice (MC), and Sentence Completion (SC by passage*

		Version One	Version Two	Version Three
Passage One	Recall	88%	92%	62%
	SC	78%	89%	67%
	MC	78%	89%	89%
Passage Two	Recall	92%	96%	58%
	SC	83%	82%	73%
	MC	73%	73%	73%

Note. Version 1 is No Adjuncts, version 2 is Pause and Consider, and version 3 is Pause and Write.

With the sentence completion task for Passage One, there was a significant effect of version ($p < .05$). As with the recall task, Versions One ($M = 7$; $SD = 2$) and Two ($M = 8$; $SD = 2$) resulted in better performance than Version Three ($M = 6$; $SD = 1$). The average scores for multiple-choice for all three versions of the passage were almost the same ($M = 7$; $SD = 1$) with no significant effects of version for multiple-choice (see Table 5).

Table 5. *Repeated-measure ANOVA for Recall, Sentence Completion (SC), Multiple-Choice (MC), and Embedded Question type for Passage One*

Source	Dependent variable	Type III sum of squares	*df*	Mean square	F	Sig.	Partial eta squared
Corrected model	Recall	1820.34[a]	2	910.17	6.84	0	0.07
	SC	181.56[b]	2	90.78	39.29	0	0.30
	MC	4.74[c]	2	2.37	1.30	0.28	0.01
Intercept	Recall	84306.19	1	84306.19	633.39	0	0.78
	SC	9383.50	1	9383.50	4.06	0	0.96
	MC	10598.34	1	10598.34	5.80	0	0.97
Version	Recall	1820.34	2	910.17	6.84	0	0.07
	SC	181.56	2	90.78	39.29	0	0.30
	MC	4.74	2	2.37	1.30	0.28	0.01
Error	Recall	24224.93	182	133.10			
	SC	420.58	182	2.31			
	MC	332.67	182	1.83			
Total	Recall	110554.00	185				
	SC	9992.00	185				
	MC	10932.00	185				
Corrected Total	Recall	26045.27	184				
	SC	602.14	184				
	MC	337.41	184				

Note. a. R squared = .070 (Adjusted R squared = .060)
  b. R squared = .302 (Adjusted R squared = .294)
  c. R squared = .014 (Adjusted R squared = .003)

Comprehension of Passage Two by Adjunct and Task

Similar to the results of Passage One, there was a significant effect of version on the written recall task ($p < .05$) for Passage Two (implicit personality theories). Once again participants achieved a higher score for Version One with no adjunct ($M = 22$; $SD = 13$) and Version Two 'pause and consider' adjunct ($M = 24$; $SD = 12$) than for Version Three pause and write adjunct ($M = 14$; $SD = 8$). Table 6 lists the results of the ANOVA.

With the sentence completion task for Passage Two, there was a significant effect of version ($p < .05$). Participants scored the same for Version One ($M = 9$; $SD = 2$) and Version Two ($M = 9$; $SD = 2$); however, the average score for Version Three was lower than the other versions ($M = 8$; $SD = 2$). Similar to Passage One, the average scores for multiple-choice with Passage Two for all three versions of the passage were almost the same ($M = 8$; $SD = 2$) with no significant effects of version for multiple-choice (see Table 6).

Table 6. *Repeated-measure ANOVA for Recall, Sentence Completion (SC), Multiple-Choice (MC), and Embedded Question type for Passage Two*

Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	Partial eta squared
		Test of between-subjects effects					
Corrected model	Recall	3002.40[a]	2	1501.20	11.70	0	0.11
	SC	55.30[b]	2	27.65	8.14	0	0.08
	MC	5.27[c]	2	2.64	0.85	0.43	0.01
Intercept	Recall	73637.41	1	73637.41	573.80	0	0.76
	SC	12835.43	1	12835.43	3.78	0	0.95
	MC	11913.11	1	11913.11	3.85	0	0.96
Version	Recall	3002.40	2	1501.20	11.70	0	0.11
	SC	55.30	2	27.65	8.14	0	0.08
	MC	5.27	2	2.64	0.85	0.43	0.01
Error	Recall	23356.46	182	128.33			
	SC	617.92	182	3.40			
	MC	563.59	182	3.10			
Total	Recall	100159.00	185				
	SC	13526.00	185				
	MC	12489.00	185				
Corrected Total	Recall	26358.87	184				
	SC	673.22	184				
	MC	568.87	184				

Note. a. R squared = .114(Adjusted R squared = .104)
　　 b. R squared = .082 (Adjusted R squared = .072)
　　 c. R squared = .009 (Adjusted R squared = -.002)

Summary of Results

With both passages, participants scored almost the same on recall and sentence completion for versions with no adjuncts and versions with 'pause and consider' adjuncts. They scored

significantly lower on these assessment tasks for the version with 'pause and write' adjuncts with both passages. No significant effects of adjuncts or no adjuncts were found for multiple-choice items with either passage.

Differential effects of different topics were not found. It is difficult to ascertain how prior knowledge could have affected performance considering that the familiarity ratings were fairly similar for both texts.

Discussion

Research on embedded questions generally shows either a positive effect on comprehension or no effect on comprehension. These conflicting results could be due to individual differences in reading comprehension ability (see Callender & McDaniel, 2007), the type of question that was inserted in the text (Hamaker, 1986), or other factors such as the type of assessment used (as discussed in the literature review). Surprisingly, the results of the present study show that in some situations, embedded questions can produce worse performance than a no adjunct condition, particularly on a recall task. This suggests that other factors may be important when considering utilizing text adjuncts for L2 readers.

Research has shown that Chinese learners of English tend to remember language by reviewing it and that language learning involves a lot of repetition and memorization. More specifically, findings of a recent study on rote learning and language acquisition in China revealed that traditional Chinese learning strategies include a combination of repetition, memorization, and practice (Li & Cutting, 2011). For the recall task in the present study, participants were asked to recall, in Chinese, as much as they could remember about the text they just read. Participants scored significantly lower on the version of each passage that asked the learner to pause and write down the answer to the question than they did on the version with no adjunct or the pause and consider adjunct.

One possibility for the decrease in performance observed in the 'pause and write' condition is that the questions and the writing process may have caused the readers to focus on the information addressed in the question too much. Because the questions for 'pause and write' were predetermined and may have included retrieval cues, the participants may have thought that this information was deemed most important and consequently they may have memorized and written this same information in the recall. A closer examination of the quality of pausal units certainly substantiates this assertion. In the written recall, the readers recalled the information asked in the 'pause and write' questions along with a few more details directly related to the specific adjunct, such as a definition of the primacy effect and specifics about how schemas influence people upon first encounters. They did not write down anything else from the passages and this could explain the lower recalls for 'pause and write' adjuncts. It is important to note that performance in the 'pause and write' condition was worse than the no adjunct or 'pause and consider' conditions, performance in all three conditions was very high compared to other research.

In two different books that address research on L2 reading, Bernhardt (1991; 2011) contends that

written recall scores that contain approximately 50% of total pausal units possible are considered 'high-level' achievements. As Table 4 indicates in the present study, with Version One (no adjunct) and Version Two (pause and consider) of both passages, learners scored a very high percent with pausal units (Passage One, Version One = 88%; Passage One, Version Two = 92%; Passage Two, Version One = 92%; Passage Two, Version Two = 96%). With Version Three of both passages, learners also scored above 50% of total pausal units (Passage One = 62%; Passage Two = 58%). The readers in the present study achieved high-level scores on written recall across all versions of each passage. Thus, it is possible that some other factor within the study affected comprehension, not just the embedded questions. One possibility comes from recent research which indicates that Chinese learners do not believe that language learning consists solely of repetition, but that memorization, understanding, practicing and reviewing leads to deeper understanding and learning (Bond, 1996; Kennedy, 2002; Li & Cutting, 2011).

In the present study, participants were told before the experiment that they would not be allowed to go back and re-read any previous pages. This protocol is consistent with prior L2 reading research with learners of foreign languages in the USA (Brantmeier, 2002, 2003; Lee, 1986; Wolf, 1993). Once the participants turned a page they could not turn back and when completing the recall they were not allowed to review the passages. Chinese learners are accustomed to reviewing and reflecting as part of the memorization and remembering process before they have to produce output. The procedures for recall in the present study, which were announced to participants before the study began, may have positively influenced performance on recall. The learners may have, in anticipation of the recall exercise, actively practiced and reviewed the passages before turning to the next page.

Li and Cutting (2011) explain that the "process" of memorization with Chinese learners involves factors from Confucian Heritage Cultures, as the learners actively engage in the process of learning. The findings of their study indicate that the combination of rote learning and reviewing is viewed by learners as the most effective strategy used. The high overall scores on written recall from the present study may also be a reflection of the recall procedures that underscored the reviewing process; however, it is too early to make this assertion. A future study of this kind could also include follow-up interviews or questionnaires that further examine this phenomenon.

The multiple-choice task showed a different pattern of results than the recall task and there were differences between the two passages in performance. The versions with 'pause and consider' or 'pause and write' yielded a higher proportion of correct multiple-choice items than did the readings with no adjunct questions for Passage 1; for Passage 2, there were no differences between the different versions. These findings replicate what has been found in other studies, specifically that differences in performance that are observed on recall tasks are not necessarily observed on multiple-choice questions (see Brantmeier et al., 2011; Callender & McDaniel, 2007). This inconsistency could be due to the limited nature of multiple-choice questions and may underscore the fact that multiple-choice questions may not be an appropriate assessment for L2 reading comprehension in general and, more specifically, in China (Pang, 2008).

Pang (2008) addressed a concern about the reliance on multiple-choice for testing in China and the author contends that it is dangerous to only use multiple-choice for testing EFL reading comprehension in China because it hinders the development and growth of the reader. The

English program in which participants were enrolled is no exception, as multiple-choice and sentence completion were the two most common tasks used to measure reading. The inconsistency of the findings with multiple-choice questions in the present study indicates that Pang (2008) may be correct and that multiple-choice questions may not be a sensitive measure of comprehension. This has important implications for English instruction in other countries, indicating that recall tasks may be a better assessment of a reader's abilities than multiple-choice.

It is also worth noting that when scores for all three assessments were converted to percentages, recall scores were higher than the sentence completion and multiple-choice tasks in the no adjunct and 'pause and consider' adjunct conditions. However, with the 'pause and write' adjunct, performance was higher on the sentence completion and multiple-choice tasks than with recall. Multiple-choice and sentence completion tasks tend to be item specific, requiring readers to remember specific information from the text rather than the text as a whole. As noted in the literature review, multiple-choice and sentence completions tasks assess a reader's text-based representation rather than the more complex situation model. Additionally, these two tasks provide retrieval cues to the reader making retrieval of the pertinent information more probable. The higher level of performance on these tasks than recall in the 'pause and write' condition could be due to the retrieval cues that were provided. As noted previously, participants in the 'pause and write' condition primarily processed the information related to the embedded questions. Thus, they were able to perform well on item-specific questions, although their recalls were somewhat limited. When the assessments provided retrieval cues, the information could be retrieved from memory.

It is also worth noting that this pattern—higher recall scores in two of the conditions—was observed even though the adjunct questions were all 'what' questions. The 'what' questions (as opposed to the 'why' questions used in previous studies) could have caused the reader to focus on surface- or text-based-level information. This may provide an explanation for why readers in the pause and write condition performed better on the assessments that focused on item-specific information. Interestingly, the pause and consider group, who received the same questions, performed better on the recall task. Thus, it is not just the question that affects comprehension, but also the task accompanying comprehension that may bias a reader towards a surface- or text-based-level representation.

Future Directions

The present results point towards two important directions for research. The first issue relates to how recall tasks are conducted. The students read the passages in English and then wrote the recall in Chinese, their native language. With L2 learners of Spanish in the USA, Brantmeier (2006) reported that, at the advanced levels of acquisition, language of recall only accounts for 3% of variance in written recall. Prior to Brantmeier (2006) the majority of L2 reading research that examined language of written recall had been done with learners at the beginning and intermediate levels. Future research should examine, with native Chinese readers, at which point or stage of acquisition learners should write the recall in English rather than Chinese. This issue could have influenced findings in the present study.

A second consideration for future research is how other study enhancement techniques can be

utilized to capitalize on the strengths of Chinese learners of English, particularly their ability to review and memorize information. One technique that has been used in L1 research is the read, recite, review technique (McDaniel et al., 2009). This technique requires learners to read the text, recite the text, and then review the information in the text that they were not able to recite. This type of study tool improves performance on both recall tests and on multiple-choice items that require application and problem solving. This method may be one that Chinese learners of English would be able to use more effectively than a strategy such as embedded questions, which may limit their mental review process to the information used to answer the questions.

Conclusion

It is well known that China has the world's largest number of English language learners, and that English is necessary for native Chinese learners to gain access to higher education. Reading is arguably the skill that most improves a learner's overall language abilities, mainly because of the abundant and readily available chunks of input. Pang (2008) concluded that reading is what Chinese learners need most for both their current academic studies and future professional careers. The emphasis of the current investigation was on the development of independent readers of English in China. In 2003, Jin and Cortazzi indicated that English in China was the 'bridge' to the future, and that future is now. The present study serves as a catalyst for future research that examines variables involved in the complex process of foreign language reading in China.

Notes

It was impossible to select either a random or a systematic non-random sample for the present study. Due to time constraints, no test of first language literacy was completed and therefore L1 literacy knowledge is not factored out in the present study.

References

Alderson, J. C. (2000). *Assessing reading*. New York, NY: Cambridge University Press.
Anderson, N. J. (1991). Individual differences in strategy use in second language reading and testing. *The Modern Language Journal*, *75*, 460–472.
Al-Shehri, S. & Gitsaki, C. (2010). Online reading: a preliminary study of the impact of integrated and split–attention formats on L2 students' cognitive load. *ReCALL*, *22*(3), 356–375.
Barnett, M. A. (1988). Reading through context: How real and perceived strategy use affects L2 comprehension. *The Modern Language Journal*, *72*, 150–160.
Bernhardt, E. B. (1991). *Reading development in a second language*. Norwoord, NJ: Ablex Publishing Corporation.
Bernhardt, E. B. (2011). *Understanding advanced second-language reading.* New York, NY: Routledge.
Bing, S. B. (1982). Role of adjunct questions and reading ability levels on rote and conceptual

learning from prose. *Instructional Science*, *11*(2), 129–38.

Block, E. (1992). See how they read: Comprehension monitoring of L1 and L2 readers. *TESOL Quarterly*, *26*(2), 319–341.

Bond, M. H. (Ed.). (1996). *The handbook of Chinese psychology*. Oxford and New York, NY: Oxford University Press.

Brantmeier, C. (2002). The effects of passage content on second language reading comprehension by gender across instruction levels. In J. Hammadou Sullivan (Ed.), *Research in second language learning: Literacy and the second language learner*. (pp. 149–176). Greenwich, CT: Information Age Publishing.

Brantmeier, C. (2003). Does gender make a difference? Passage content and comprehension in second language reading. *Reading in a Foreign Language*, *15*(1), 1–27.

Brantmeier, C. (2005). Effects of reader's knowledge, text type, and test type on L1 and L2 reading comprehension. *The Modern Language Journal*, *89*(1), 37–53.

Brantmeier, C. (2006). Readers' gender and test method effect in second language reading. *Forum on public policy: A journal of the Oxford round table,* University of Oxford, UK, 1–36.

Brantmeier, C., Callender, A., & McDaniel, M. (2011). The effects of embedded questions and elaborative interrogation questions on reading comprehension with advanced second language learners. *Reading in a Foreign Language*, *23*(2), 187–207.

Bügel, K., & Buunk, B. P. (1996). Sex differences in foreign language text comprehension: The role of interests and prior knowledge. *The Modern Language Journal*, *80*, 15–31.

Callender, A. A. & McDaniel, M. A. (2007). The benefits of embedded questions for low and high structure builders. *Journal of Educational Psychology*, *99*, 339–348.

Callender, A. A., McDaniel, M. A., & Wildman, K. (unpublished data). Learner-directed study strategies for low ability readers.

Carrell, P. L. (1984a). The effects of rhetorical organization on ESL readers. *TESOL Quarterly*, *18*, 441–469.

Carrell, P. L. (1984b). Evidence of a formal schemata in second language comprehension. *Language Learning*, *34*, 87–112.

Carrell, P. L. (1989). Metacognitive awareness and second language reading. *The Modern Language Journal*, *73*(2), 121–133.

Coleman, C., Lindstrom, J., Nelson, J., Lindstrom, W., & Gregg, K. (2010). Passageless comprehension on the Nelson-Denny Reading Test: Well above chance for university students. *Journal of Learning Disabilities*, *43*(3), 244–249.

Dowaliby, F. J. (1990). Adjunct questions in prose: A question position-by-reading ability interaction. *American Annals of the Deaf*, *135*(1), 50–53.

Grabe, W. (2009). *Reading in a second language: Moving from theory to practice*. New York, NY: Cambridge University Press.

Haley, M. H. & Ferro, M. S. (2011). Understanding the perceptions of Arabic and Chinese teachers toward transitioning into US schools. *Foreign Language Annals*, *44* (2), 289–307.

Hamaker, C. (1986). The effects of adjunct questions on prose learning. *Review of Educational Research*, *56*, 212–242.

Hammadou, J. (2000). The impact of analogy and content knowledge on reading comprehension: What helps, what hurts. *The Modern Language Journal*, *84*, 38–50.

Hosenfeld, C. (1977). A preliminary investigation of the reading strategies of successful and

unsuccessful second language learners. *System*, *5*, 11–123.

Hudson, T. (1982). The effects of induced schemata on the short-circuit in L2 reading: Non-decoding factors in L2 reading performance. *Language Learning*, *32*, 1–32.

Hudson, T. (2007). *Teaching second language reading*. Oxford, UK: Oxford University Press.

Jin, L. & Cortazzi, M. (2003). English language teaching in China: A bridge to the future. In H. W. Ho & R. Wong (Eds.), *English language teaching in East Asia today* (pp. 53–64). Singapore: Eastern Universities Press.

Jin, L. & Cortazzi, M. (2011). More than a journey: 'Learning' in the metaphors of Chinese students and teachers. In Jin, L. & Cortazzi, M. (Eds.), *Researching Chinese learners: Skills, perceptions and intercultural adaptations* (pp. 67–92) London, UK: Palgrave & Macmillan.

Johnson, P. (1981). Effects on reading comprehension of language complexity and cultural background of a text. *TESOL Quarterly*, *15*, 169–181.

Kennedy, P. (2002). Learning cultures and learning styles: Myth-understandings about adult (Hong Kong) Chinese learners, *International Journal of Lifelong Education*, *21*(5), 430–445.

Kintsch, W. (1988). The role of knowledge in discourse comprehension: A construction integration model. *Psychological Review*, *95*, 163–182.

Koda, K. (2005). *Insights into second language reading: A cross-linguistic approach*. New York, NY: Cambridge University Press.

Lee, J. F. (1986). On the use of the recall task to measure L2 reading comprehension. *Studies in Second Language Acquisition*, *8*, 201–12.

Lee, J. F. and Ballman, T. L. (1987). Learners' ability to recall and rate important ideas of an expository text. In B. Van Patten, T. R. Dvorack, & J. F. Lee (Eds.), *Foreign language learning: A research perspective* (pp. 108–117). Rowley, MA: Newbury House.

Li, X. & Cutting, J. (2011). Rote learning in Chinese culture: Reflective active Confucian-based memory strategies. In L. Jin, & M. Cortazzi (Eds.), *Researching Chinese learners: Skills, perceptions and intercultural adaptations* (pp. 21–42) London, UK: Palgrave & Macmillan.

Liontas, J. I. (1999). *Developing a pragmatic methodology of idiomaticity: The comprehension and interpretation of SL vivid phrasal idioms during reading*. Unpublished doctoral dissertation, The University of Arizona, Tucson, AZ.

Long, D. L., & Prat, C. S. (2002). Memory for Star Trek: The role of prior knowledge in recognition revisited. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *28*(6), 1073–1082.

Long, D. L., Wilson, J., Hurley, R., & Prat, C. S. (2006). Assessing text representations with recognition: The interaction of domain knowledge and text coherence. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *32*(4), 816–827.

Martinez, M. E. (1999). Cognition and the question of test item format. *Educational Psychologist*, *34*(4), 207–218.

McDaniel, M. A. & Donnelly, C. M. (1996). Learning with analogy and elaborative interrogation. *Journal of Educational Psychology*, *88*, 508–519.

McDaniel, M. A., Howard, D. C., & Einstein, G. O. (2009). The read-recite-review study strategy: Effective and portable. *Psychological Science*, *20*(4), 516–522.

McNamara, D. S., & Kintsch, W. (1996). Learning from texts: Effects of prior knowledge and text coherence. *Discourse Processes*, *22*(3), 247–288.

Mohammed, M. A., & Swales, J. M. (1984). Factors affecting the successful reading of technical instructions. *Reading in a Foreign Language*, *2*, 206–217.

Ozuru, Y., Best, R., Bell, C., Witherspoon, A., & McNamara, D. S. (2007). Influence of question format and text availability on the assessment of expository text comprehension. *Cognition and Instruction, 25*(4), 399–438.

Pang, J. (2008). Research on good and poor reader characteristics: Implications for L2 reading research in China. *Reading in a Foreign Language*, *20*(1), 1–31.

Peverly, S., & Wood, R. (2001). The effects of adjunct questions and feedback on improving the reading comprehension skills of learning-disabled adolescents. *Contemporary Educational Psychology*, *26*(1), 25–43.

Pritchard, R. (1990). The effects on cultural schemata on reading processing strategies. *Reading Research Quarterly*, *25*, 273–295.

Rumelhart, D. & Norman, D. (1981). Analogical processes in learning. In J. R. Anderson (Ed.), *Cognitive skills and their acquisition* (pp. 335–360). Hillsdale, NJ: Erlbaum.

Sarig, G. (1987). High-level reading in the first and in the foreign language: Some comparative process data. In J. Devine, P. L. Carrell, & D. E. Eskey (Eds.), *Research in reading in English as a second language* (pp. 105–120). Washington: TESOL.

Schueller, J. (2009). Gender and foreign language reading comprehension: The effects of strategy training. In C. Brantmeier (Ed.), *Crossing languages and research methods: Analyses of adult foreign language reading* (pp. 147–164). Charlotte, NC: Information Age Publishing.

Seifert, T. L. (1993). Effects of elaborative interrogation with prose passages. *Journal of Educational Psychology*, *85*, 642–651.

Steffensen, M. S., Joag-dev, C., & Anderson, R. C. (1979). A cross-cultural perspective on reading comprehension. *Reading Research Quarterly*, *15*, 10–29.

Vosniadou, S., & Ortony, A. (1983). The emergence of the literal-metaphorical-anomalous distinction in young children. *Child Development*, *54*, 154–161.

Walczyk, J., & Hall, V. (1989). Effects of examples and embedded questions on the accuracy of comprehension self-assessments. *Journal of Educational Psychology*, *81*(3), 435–437.

Wolf, D. (1993). A comparison of assessment tasks used to measure FL reading comprehension. *The Modern Language Journal*, *77*, 473–89.

Yonelinas, A. P. (2002). The nature of recollection and familiarity: A review of 30 years of research. *Journal of Memory and Language*, *46*(3), 441–517.

Young, D. J., & Oxford, R. (1997). A gender-related analysis of strategies used to process input in the native language and a foreign language. *Applied Language Learning*, *8*, 43–73.

Appendix A

Reading One and Corresponding Assessment Tasks

FIRST IMPRESSIONS

First impressions are the initial judgments we make about people and they play an important role in social perceptions. We are more likely to form opinions of others quickly, based on first impressions, than to refrain from forming opinions until we have more information. These first impressions may change as we get to know a person better, but we often tend to hang on to them even in the face of contradictory

evidence. Thus, initial opinions may have a strong impact on our future interactions with people.

For example, if you first meet a new tenant in your apartment building at a party at which he appears to be loud and egotistical, it will probably be hard for you to perceive him as a sensitive, caring person when you later see him comforting a small child who has scraped his knee. The first information we receive about a person often seems to count the most, a phenomenon referred to as the **primacy effect.**

This effect was demonstrated in an experiment in which two lists of traits describing a person were read to two separate groups of subjects (Asch, 1946). In one group, subjects heard a description that began with positive characteristics (such as intelligent and industrious) followed by negative ones (impulsive, stubborn, and so forth). Their overall assessments of this person were positive. Subjects in the other group heard the same list, but in reverse order. The results: their assessments were far more negative.

PAUSE TO CONSIDER IN SILENCE (please do not write anything):

1. What is the primacy effect?
（请暂停，想一下：什么是首因效应？） （**不用写出来**）

SCHEMAS

Schemas are the conceptual frameworks we use to make sense out of our world. The concept of schemas helps explain how we perceive the people we meet. For example, you might have schemas of lawyers as aggressive and intelligent and of professor as studious and somewhat introverted. Social psychologists refer to these generalized assumptions about certain classes of people as *person schemas*.

Person schemas provide a structure for evaluating the people we meet, allowing us to take shortcuts by concentrating on some facts and ignoring others. When we assess others for the first time, we tend to pick up only the information that fits our existing schemas, ignoring the rest. This process is cognitively efficient but, unfortunately, it is not always the most accurate way of forming impressions (Brigham, 1986).

Once we fit a person into a schema, we tend to use that schema as a general organizing principle for interpreting further information about the person. For example, if our first impression of a new neighbor is that she is unfriendly, we are likely to evaluate her failure to comment on our shiny new car as further evidence for unfriendliness. If she then acts in a way that does not fit the schema (for example, picking up our garbage after it has been scattered by a storm), we may dismiss that act by concluding that she picked up the mess only because she was worried that it would blow onto her lawn.

PAUSE TO CONSIDER IN SILENCE (please do not write anything):

2.   How do schemas influence how we perceive people we meet?
（请暂停，想一下：图式如何影响我们认知我们见到的人？） （**不用写出来**）

Written Recall
Please write down, in Chinese, as much as you can remember about what you just read. Please do not look back at the reading passage.（请根据你刚刚读过的短文，**用汉语**写出你所能记住的所有内容。请不要再次阅读该短文。）

Sentence Completion Items（阅读一：补全句子。）
Please complete the following sentences that are based on the prior reading. Please write in Chinese. （请根据所阅读的文章内容**用汉语**补全下列句子。请不要再次阅读该短文。)

1. According to the primacy effect, if you were given a description of a person that began with their negative characteristics followed by positive characteristics, （根据首因效应，如果你先听到对于一个人的负面特征的描述，然后才是对其正面特征的描述，）

_____.

2. When meeting a person for the first time, it is likely that （当第一次见到一个人，很有可能）

_____.

3. The primacy effect states that （首因效应说的是）

_____.

4. First impressions（第一印象）

_____.

5. Schemas are（图式是）

_____.

6. Once we have fit a person into a schema（一旦我们把一个人框在一个图式里）

_____.

7. Person schemas（个人□式）

_____.

8. An advantage of using person schemas is （利用个人图式的一个优势是）

_____.

9. You believe that doctors are calm, intelligent individuals who do not show strong emotional responses. These beliefs about the traits of doctors are an example of（你相信医生冷静、聪慧，且不显露强烈的个人情感。这些关于医生的特征是什么的例证）

_____

Multiple-choice Questions （阅读一：选择题）
Please circle the correct answer.（请在正确的选项上**画圈**。）

1. According to the primacy effect, if you were given a description of a person that began with their negative characteristics followed by positive characteristics, your overall assessment of the person would be（根据首因效应，如果你先听到对于一个人的负面特征的描述，然后才是对其正面特征的描述，那么你对这个人的整体评价很可能是）：
    a. Positive（正面的）
    b. Indifferent（无动于衷的）
    c. Negative（负面的）
    d. unable to be determined by the information given（根据已知信息不能确定）

2. When meeting a person for the first time, it is likely that we will（当第一次见到一个人，我们很可能）：
    a. refrain from forming an opinion until we have more information（在获得更多信息前不会形成一个意见）
    b. form a first impression very quickly（很快就会形成一种第一印象）

c. make an initial impression but change it if contradictory evidence is presented（形成一种第一印象，但如果有相反的证据这种印象会改变）

d. only form a first impression if we had an extreme reaction to the person（如果对那个人印象深刻，仅仅会形成一个第一印象）

3. The primacy effect states that（首因效应说的是）:

a. The first information about a person counts the most in our perceptions（在认知中对于一个人的最初的信息最重要）

b. The first person we meet influences our perceptions of people we meet later（我们遇到的第一个人影响到我们对于后来遇到的人的认知）

c. The more quickly we make an impression, the more long-lasting it is（我们越快形成一中印象，这种印象就会越长久）

d. We tend to like someone more the first time we meet them（我们在第一次见到一个人时会更喜欢他／她）

4. First impressions（第一印象）:

a. are short lived（持续时间很短）

b. change when contradictory evidence is presented（在有相反证据时会改变）

c. are highly accurate（非常准确）

d. influence our perceptions of others even in the future（甚至影响将来对于我们会遇到的其他人）

5. Schemas are（图式是）:

a. Mental frameworks imposed on us by the outside world（外部世界加给我们的心理框架）

b. Mental frameworks we use to make sense of the world（我们用于理解外部世界的心理框架）

c. Unique representations of others（对于他人的独特的表征）

d. Patterns of social behavior one is most likely to perform（一个人可能的社会行为模式）

6. Once we have fit a person into a schema we（一旦我们把一个人框在一个图式里，我们）:

a. Ignore information about the person that doesn't fit in the schema（会忽视不符合这个图式的人）

b. Consider all of the information that we learn about a person（会考虑我们所了解的关于那个人的所有的信息）

c. Forget the first impressions we have made about the person（会忘记我们对于那个人的第一印象）

d. Have an accurate representation of the person（会对于那个人有一个准确的表征）

7. Person Schemas（个人图式）:

a. Provide a structure for evaluating the people we meet.（为我们评价我们遇到的人提供了一种框架）

b. Allow us to take shortcuts by concentrating on some facts and ignoring others.（使我们可以集中关注一些事实而忽视其它一些事实）

c. Are not always the most accurate way of forming impressions.（不总是形成一个准确印象的方式）

d. All of the above.（上述所有选项）

8. An advantage of using person schemas is that they are（利用个人图式的一个优势是它们）:

a. Accurate（准确）

b. Efficient（省时）

c. Flexible（灵活）

d. Generative（具有生成／能产性）

9. You believe that all doctors are calm, intelligent individuals who do not show strong emotional responses. These beliefs about the traits of doctors are an example of（你相信医生冷静、聪慧，且不显露强烈的个人情感。这些关于医生的特征是什么的例证）:
   a.   Primacy effects（首因效应）
   b.   Social Opinions（社会观点）
   c.   Person Schemas （个人图式）
   d.   Social Perceptions（社会认知）

****

Please indicate your degree of familiarity with the topic of the reading passages:（你对本篇文章所探讨内容的熟悉程度如何，请圈出下列最符合你的情况的描述）:
   1.   I was really familiar with the topic of the passages.（及其熟悉）
   2.   I was very familiar with the topic of the passages.（很熟悉）
   3.   I was somewhat familiar with the topic of the passages.（比较熟悉）
   4.   I was not very familiar with the topic of the passages.（不是很熟悉）
   5.   I was not at all familiar with the topic of the passages.（一点也不熟悉）

Reading Two and Corresponding Assessment Tasks

IMPLICIT PERSONALITY THEORIES

Just as person schemas guide us in fitting people into preexisting categories, we also make implicit assumptions about personality traits that usually go together. For instance, if we meet a person whom we perceive as intelligent, we may expect that person also to be skillful and imaginative. These assumptions about how traits are related to each other in people's personalities are called **implicit personality theories** (Bruner & Tagiuri, 1954; Cantor & Mischel, 1979). We may not be aware of many of our implicit assumptions. However, since these associations may be firmly rooted in our minds, they are likely to be activated when we meet people for the first time.

Our implicit personality theories are often organized around **central traits**—traits that we tend to associate with many of other characteristics. For example, many people associate the trait of coldness with unsociability, humorlessness, and lack of popularity. Even a single central trait may play an important role in organizing our implicit personality theories about others. In an early study, Solomon Asch (1946) presented two groups of subjects with a list of seven traits describing a hypothetical person—*warm* versus *cold*—yet this difference significantly influenced the subjects who had been provided a trait list that included *warm* were more likely to predict that the hypothetical person was generous or had a good sense of humor than were those subjects whose list contained the word *cold*.

Psychologists use the term **halo effect** to describe our tendency to infer other positive (or negative) traits from our perception of one central trait. The halo effect was demonstrated in a study in which subjects observed two versions of an interview with a Belgian professor in which he appeared to either likable or unlikable. Not only did subjects prefer the "likable" person in the interview; they also responded more positively to seemingly unrelated qualities such as his accent and physical appearance (Nesbett & Wilson, 1977).

PAUSE TO CONSIDER. Please write your answer after the question. Please write in Chinese.

3. What are implicit assumptions?
（请暂停，想一下：什么是隐含假设／假定？）（**请用汉语回答**）

ATTRIBUTING CAUSES TO BEHAVIORS

An important part of social perceptions are the judgments we make about why people behave as they do. Our responses to other people are strongly influenced by these attributions and we are constantly attempting to understand the reason for other people's actions, figure out their attitudes and personality traits, and, ultimately, gain some control over subsequent interactions with them through our increased ability to predict their behaviors.

      According to **attribution theory** (Heider, 1958; Jones,1979; Kelley, 1971; Ross & Fletcher, 1985), we tend to attribute people's behavior either to *dispositional* (internal) causes, such as motivational states or personality traits, or to *external* causes, such as environment or situational factors. This distinction can have important effects on our relationships with people. For example, suppose you have recently begun dating someone you like very much, and the two of you spend a weekend visiting your date's parents. Much to your dismay, your friend acts like a different person—restrained., impersonal, and physically unresponsive. What has caused the change? If you attribute it to external factors (that your date is ill at ease around his or her parents) you are likely to feel that the relationship is seriously threatened. However, if you attribute the change to an internal cause (that your partner no longer feels responsive to you), you may seriously reevaluate the relationship.

PAUSE TO CONSIDER. Please write your answer after the question. Please write in Chinese.

      4. What are attributions?
（请暂停，想一下：什么是归因？）（**请用汉语回答**）

Written Recall
Please write down, in Chinese, as much as you can remember about what you just read. Please do not look back at the reading passage. （请根据你刚刚读过的短文，**用汉语**写出你所能记住的所有内容。请不要再次阅读该短文。）

Sentence Completion Items（阅读二：补全句子。）
Please complete the following sentences that are based on the prior reading. Please write in Chinese. （请根据所阅读的短文内容**用汉语**补全下列句子。请不要再次阅读该短文。）

1. According to implicit personality theories, if we perceive someone as aggressive, we will assume that they are（根据潜在人格理论，如果我们认为某个人很好斗，我们会认为他／她）
   _____.

2. According to implicit personality theories, if you meet someone who you perceive as being social, you may also expect them to be（根据潜在人格理论，如果觉得你遇到的人很善于交际，你通常也会期望他／她）_____.

3. Implicit personality theories are often organized around（潜在人格理论通常建立在）
   _____.

4. We make assumptions about personality traits that generally go together. These assumptions are called（我们对那些联系在一起的人格特征／特质做出假设，这些假设被称为）
   _____.

5. When we assume that a person who is kind is also warm, selfless, and humorous, we are demonstrating（当我们认为一个对人友好的人也热情、无私且幽默，这是什么的体现？）
   _____.

6. According to the halo effect, if we observe someone who is likeable, our rating of that person's appearance will be（根据光环／晕轮效应，如果我们发现一个人招人喜欢，我们对于那个人的

容貌的评价会）_____.

7. Our tendency to infer other positive traits from one positive central trait is called（我们从一个积极核心特质推断其它积极特质的这种倾向被称为）

_____.

8. Two theories that attempt to explain how we make attributions are（用来解释我们如何作归因判断的两种理论是)_____.

9. Judgments we make about why people behave the way they do are called（我们对于人的行为的判断被称为）_____.

10. If we found out that a classmate failed an exam, an example of an external attribution would be that（假如我们发现一个同学考试未及格，外向／部归因的一个例证会是）

_____.

11. According to attribution theory we tend to attribute people's behavior to either（根据归因理论，我们会把人们的行为归因于）_____（或）_____.

Multiple-Choice Questions（阅读二：选择题）
Please circle the correct answer.（请在正确的选项上**画圈**。）

1. According to implicit personality theories, if we perceive someone as aggressive, we will assume that they are（根据潜在人格理论，如果我们认为某个人很好斗，我们会认为他／她）
    a. also loud and rude（也会很吵闹和粗鲁）
    b. in a frustrating situation（处于一个令他沮丧的情形中）
    c. interacting with an aggressive person（在与一个好斗的人在交流）
    d. always aggressive（总是很好斗）

2. According to implicit personality theories, if you meet someone who you perceive as being social, you may also expect them to be:（根据潜在人格理论，如果你遇到的人很善于交际，你通常也会期望他／她）
    a. selfish and uncaring（自私且不关心他人）
    b. humorous, warm, and popular（幽默、热心且受欢迎）
    c. aloof, closed, and exclusive（冷淡、封闭且排外）
    d. mischievous and mean（刁钻促狭且小气）

3. Implicit personality theories are often organized around:（潜在人格理论通常建立在）
    a. Schemas（图式）
    b. Stereotypes（刻板印象）
    c. External behaviors（外在行为）
    d. Central traits（中心特质）

4. We make assumptions about personality traits that generally go together. These assumptions are called:（我们对那些联系在一起的人格特征／特质做出假设，这些假设被称为）
    a. Internal personality assumptions（内在人格假设）
    b. Implicit personality theories（潜在人格理论）
    c. Social perceptions（社会知觉／感知）
    d. Schemas（图式）

5. When we assume that a person who is kind is also warm, selfless, and humorous, we are demonstrating:

（当我们认为一个对人友好的人也热情、无私且幽默，这是什么的体现？）
    a. The halo effect（晕轮／光环效应）
    b. Attributions（归因）
    c. Implicit assumptions（隐含假设）
    d. Personality schemas（人格图式）

6. According to the Halo Effect, if we observe someone who is likeable, our rating of that person's appearance will be:（根据光环／晕轮效应，如果我们发现一个人招人喜欢，我们对于那个人的容貌的评价会）
    a. Unaffected by their likeability（不受其受欢迎程度的影响）
    b. Positive（正面的／积极的）
    c. More positive than if the person was unlikeable（会比其不招人喜欢更加积极／正面）
    d. Negative（负面的／消极的）

7. Our tendency to infer other positive traits from one positive central trait is called:（我们从一个积极核心特质推断其它积极特质的这种倾向被称为）
    a. Positive Inference（积极推论／推理）
    b. Central Trait Theory（中心特质理论）
    c. The Inference Effect（推理效应）
    d. The Halo Effect（光环／晕轮效应）

8. Two theories that attempt to explain how we make attributions are:（用来解释我们如何作归因判断的两种理论是）
    a. Covariance Principle and Correspondent Inference（共变原理与对应推理）
    b. Dispositional Principle and External Inference（性情／性格原则与外向／部推论）
    c. Attribution Theory and Interaction Theory（归因理论与互动理论）
    d. Correspondent Attribution and Correspondent Inference（对应归因与对应推理）

9. Judgments we make about why people behave the way they do are called:（我们对于人的举止的判断被称为）
a. Correspondent Inferences（对应推理）
b. Dispositional Inferences（性格／性情推理）
c. Attributions（归因）
d. Social Theories（社会理论）

10. If we found out that a classmate failed an exam, an example of an external attribution would be that:（假如我们发现一个同学考试未及格，外向归因的一个例证会是）
 a. He is lazy（他懒惰）
 b. He did not study enough（他学习不用功）
 c. He stayed up too late the night before the exam（考试之前那个晚上熬夜太晚）
 d. The teacher made an unfair exam（老师考试不公平）

11. According to attribution theory we tend to attribute people's behavior to either:（根据归因理论，我们会把人们的行为归因于）
    a. Motivational states or personality traits（动机状态或人格特质）
    b. Environmental or situational factors（环境或情景因素）

 c. Dispositional or external factors（性格或外部因素）
 d. Personality or situational factors（人格或情景因素）

****

Please indicate your degree of familiarity with the topic of the reading passages:（你对本篇文章所探讨内容的熟悉程度如何，请圈出下列最符合你的情况的描述）：

 6. I was really familiar with the topic of the passages.（及其熟悉）
 7. I was very familiar with the topic of the passages.（很熟悉）
 8. I was somewhat familiar with the topic of the passages.（比较熟悉）
 9. I was not very familiar with the topic of the passages.（不是很熟悉）
 10. I was not at all familiar with the topic of the passages.（一点也不熟悉）

About the Authors

Cindy Brantmeier is Associate Professor of Applied Linguistics at Washington University in St. Louis. She is the principal investigator in the Language Research Lab, Co-Director of the Graduate Certificate in Language Instruction, Director of Teacher Training, and Director of the Undergraduate Program in Applied Linguistics. She also oversees technology-based exams for language program assessment and placement. Dr. Brantmeier has published articles concerning interacting variables in adult second language reading, language research methodology, testing and assessment, and other related areas in journals such as *The Modern Language Journal*, *System*, *Foreign Language Annals*, and *Reading in a Foreign Language* among others. She is also Editor of several volumes and a book on adult foreign language reading. Email: cbrantme@wustl.edu

Aimee Callender is Assistant Professor in the Psychology Department at Auburn University. Her research interests are centered on using what cognitive psychologists have learned in the laboratory and applying those principles to improve educational practice. In particular, she is interested in text comprehension, memory for text, and investigating new ways to improve comprehension for texts that are encountered in a classroom setting. This involves evaluating reading comprehension measures, investigating study strategies, and understanding the study strategies undergraduates use on their own. Dr. Callender's work has appeared in journals and volumes such as *Contemporary Educational Psychology*, *Journal of Educational Psychology, and Learning and Memory: A Comprehensive Reference* among others. Email: aac0005@auburn.edu

Xiucheng Yu is Associate Professor of English and English Linguistics at Northeast Normal University (NENU) in China. He is Deputy Chair of the English Department. From 2009 to 2010 he was a research associate at Washington University in St. Louis, where he collaborated with Cindy Brantmeier in the Language Research Laboratory. Before teaching English majors at NENU, he taught English for Specific Purposes (ESP) at Norman Bethune University of Medical Sciences and Changchun Taxation College. He offers courses in reading, grammar and writing, as well as linguistics-related courses to undergraduates. He also teaches *General Linguistics* (*Advanced*) and *Linguistics and Foreign Language Teaching* to graduate students. His research interests mainly involve foreign language teaching , pragmatics (especially speech act studies),

and cross-cultural communication. Professor Yu also serves as coordinator of the Writing Center of NENU. Email: yuxc765@nenu.edu.cn

Mark McDaniel is Professor of Psychology at Washington University in St. Louis. Dr. McDaniel is the principle investigator in the Memory and Complex Learning Laboratory and the Director of the Center for Integrative Research on Cognition, Learning, and Education. He has two main research interests: prospective memory and education. He conducts research in the general area of human learning and memory. His most significant lines of work encompass several areas: prospective memory, encoding processes in enhancing memory, retrieval processes and mnemonic effects of retrieval, functional and intervening concept learning, and aging and memory. One unifying theme in this research is the investigation of factors and processes that lead to memory and learning failures. In much of this work, he has extended his theories and investigations to educationally relevant paradigms. He has an extensive list of publications that appear in leading outlets in the field of psychology and educational psychology. Email: mmcdaniel@artsci.wustl.edu