International Relations in the EFL Classroom :

The Effect of Pre-Teaching Strategies on Content-Based Listening Comprehension

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EFL 授業における国際関係論
——コンテンツベースクラスのリスニングによる理解を助ける事前教授法の効果——

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Abstract :

　　With content-based instruction (CBI) on the rise at Japanese universities, English as a foreign language (EFL) students are increasingly faced with higher demands placed on their English proficiency, especially listening comprehension. Unlike reading, students cannot control the speed of input when listening to academic lectures. For this reason, as well as others, listening is a difficult and complex skill. Yet, there is a dearth of research regarding listening comprehension of content-based lectures in an EFL setting. This paper investigates two types of pre-teaching strategies to aid students' listening comprehension : 1) activating schema such as background knowledge and socio-cultural information ; 2) teaching important vocabulary terms. The study's findings suggest that schema activation affects student perceptions of topic difficulty, which may have implications for teachers. Further studies are needed to provide concrete guidance for content teachers and language specialists on how to best prepare EFL students for success in university-level academic lecture classes.

要旨：コンテンツ・ベースの教授法（CBI）が日本の大学に普及する中、外国語としての英語(EFL)の学習者たちは英語運用能力、とりわけリスニング能力が必要とされる現状に直面している。リーディングとは違い、学生たちはアカデミックな講義を聴く際に、情報が入ってくるスピードを調節することができない。これが、リスニング能力が難易度の高い複雑なスキルであることの一因だ。しかし、EFL 環境でのコンテンツ・ベースの講義におけるリスニングによる理解度を扱った研究は十分になされていない。本論はリスニングによる理解を助けるため、授業前活動として実施される次の二種類の方策について調査する。（1）バックグラウンドとなる知識や社会的・文化的情報を提供することによるスキーマの活性化。（2）重要なボキャブラリーの提供。調査の結果、スキーマの活性化はトピックの難易度に関する学生の認識に影響を与え、それゆえ教員の授業デザイン等にも影響を与えうることがわかった。EFL の学生たちが大学レベルのアカデミックな講義に万全の体勢で臨める状況をつくるべく、コンテンツ・ベース授業担当者や語学教員に具体的なガイダンスを提供するためには、当該分野の研究の更なる発展が望まれる。

Key words：Schema theory, Content-based instruction, CBI, Listening comprehension

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Making the leap from conversational fluency to academic language proficiency is one of the most difficult trials English as a foreign language (EFL) students encounter.[1] After all, listening to and comprehending university lectures is a challenging task even for native speakers. Japanese university students, however, are being increasingly exposed to academic English as a result of the expansion of content-based instruction (CBI).[2] Despite the prevalence of academic English in university classrooms, little research specifically examines the use of academic English lectures in an EFL setting. This article helps to address this gap, by analyzing Japanese students' perceptions towards academic English lectures. This research extends on previous studies regarding academic listening comprehension by empirically linking student perceptions to learning outcomes and by incorporating an experimental design to test the effect of pre-teaching strategies on students' attitudes.

First, the article examines perceptions toward listening comprehension and their empirical relationship to listening proficiency. In line with expectations, it is found that almost all students in an EFL setting report difficulty in comprehending academic English lectures. All the perceived barriers to listening, however, are not associated with learning outcomes. Specifically, only perceptions of topic difficulty are associated with lower levels of proficiency. Second, the article examines the use of pre-teaching strategies to reduce perceptions of topic difficulty. Following schema theory, it is argued that students' lack of accessible schema hinder listening comprehension of academic material. Utilizing an experimental design, it is found that schema-activation reduces perceptions of topic difficulty. Pre-teaching vocabulary, on the other hand, is found to have no effect.

The article concludes with a discussion of the findings and their applicability to English education in Japanese universities. To aid students' ability to bridge the gap between basic interpersonal communication and academic English competency, an increase in coordination between content specialists and professional language teachers, such as an adjunct model approach to CBI, is recommended. Furthermore, to enhance the effectiveness of CBI, special attention should be given to evaluating student listening skills when determining course levels.

Academic Listening Comprehension

CBI refers to the simultaneous teaching of academic content and language and is grounded in a number of theoretical models of language acquisition.[3] Following Krashen's input hypothesis, language acquisition is boosted by comprehensible input (Krashen, 1985). Teaching content in a target language has the potential to improve language learning. Likewise, CBI is argued to facilitate the production of comprehensible output (Butler, 2005). Producing coherent output in the target lan-

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1）Academic language proficiency refers to the ability to use language in an academic setting where higher order cognition is necessary and context is reduced. (Cummins, 1980 ; Osada, 2004). In the context of this article, academic refers exclusively to university-level material.

2）CBI and English as a medium of instruction (EMI) are sometimes conflated in the literature. In this article, following Brinton, Snow and Wesche (2003), CBI indicates courses that integrate language instruction and content with the goal of teaching the target language. EMI courses, on the other hand, are courses delivered in English focused on teaching substantive material with no language component. Content courses are also commonly referred to as content language integrated learning (CLIL). While some researchers consider CLIL and CBI distinct approaches (Brown & Bradford, 2016), following Cenoz (2015), CBI and CLIL are pedagogically equivalent.

3）The extent to which CBI focuses on language education versus content varies between content-driven and language-driven. If language takes precedent over content, for example, the course can be considered language-driven (Snow & Brinton, 2017).

guage encourages learners to consider linguistic factors beyond comprehension-enhancing language acquisition (Swain, 1993). Moreover, CBI's emphasis on cognitively demanding tasks are deemed essential for the development of Cognitive Academic Language Proficiency (Cummins, 1992).

While the ascendance of CBI exposes students to a growing number of content-based lectures, many students find these lectures too difficult, stressful, and frustrating (Al-Nouh & Abdul-Kareem, 2017；Hasan, 2000；Mallah, Jafari, & Rezaee, 2017；Osada, 2004). Despite this phenomenon and its direct implications for the effectiveness of CBI in university classrooms, there is little research specifically examining students' perceptions toward academic listening comprehension (Al-Nouh & Abdul-Kareem, 2017；Huang, 2006；Jeon, 2007；Rahimirad & Moini, 2015). Moreover, it is un-certain how students' perceptions map onto performance.

A number of studies examine listening comprehension in an ESL setting and/or listening com-prehension of non-academic material (Al-Nouh & Abdul-Kareem, 2017).[4] It is important, however, to consider academic listening distinctly in an EFL setting as EFL learners face unique challenges that must be taken into consideration. Principally, EFL learners receive less exposure to the target language, in turn creating greater barriers to listening comprehension. Second, all students face a double challenge when trying to comprehend academic content. Linguistic deficiencies as well as content difficulties can inhibit comprehension. That is to say a student may understand the words but fail to grasp the difficult concepts presented in a university-level lecture. Linguistic skills are thus a necessary but insufficient condition for comprehending an academic lecture.

Previous studies have identified a number of perceived barriers to listening comprehension in EFL learners. These barriers can be classified into two main categories, linguistic and external. Re-garding linguistic factors students commonly complain of difficult vocabulary, speed and pronuncia-tion, as well as factors directly related to the complexity of listening such as contemplating un-known words while continuing to follow the lecture, not being able to repeat the material, and not recognizing word boundaries. External factors include issues with the listening environment such as noise, temperature, and lighting； problems with the presentation's style, organization, or visual aids； as well as personal attributes of the listener such as fatigue, a lack of interest, or, inability to concentrate (Al-Nouh & Abdul-Kareem, 2017； Mallah et al., 2017； Osada, 2004).

In regards to academic listening tasks, linguistic competency does not guarantee comprehen-sion. Students must consider a complex topic with minimal context； making comprehension more than a simple linguistic challenge. In fact, previous studies have identified a number of issues that may be attributed to content deficiencies and not linguistic barriers. Al-Nouh and Abdul-Kareem (2017, pp.478-479), for example, note that students fail to "understand the purpose of the lecture," "understand the words but not intended message," and "miss the whole ideal of the speech." Simi-larly, Mallah et al (2017, p.21) reports EFL students have "problems related to the Content of the Listening Text." These problems highlight the double challenge that students face.

How do these perceived barriers relate to student performance? Following a cognitive approach to comprehension, relevant schema are required for incorporating new information. Schematic knowledge includes background information on the topic as well as relevant socio-cultural informa-

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4) The academic level of the listening material used and delivery method, i.e. spoken or recorded, in many studies is un-clear.

tion (Carrell, 1983). A failure of schema activation when presented with new pieces of information leads to non-comprehension. This can occur from both a top-down and a bottom-up process. From a top-down process the speaker may fail to provide the listener with adequate cues. From a bottom-up perspective, the listener may lack the schema considered appropriate by the speaker (Hu, 2012). This mismatch is abundantly clear in the struggle between students and professors. On one hand, the professor anticipates a certain level of knowledge and experience that students may not possess which inhibits their comprehension. On the other hand, students may feel the lecture is vague and unclear if the professor fails to provide sufficient cues. From the cognitive perspective schemata activation is a necessary component of listening comprehension. It is thus expected that perceived topic difficulty will be associated with a reduction in listening comprehension.

The effect of language deficiencies on comprehension is less clear. From a language-driven approach, students who lack the appropriate vocabulary, can't distinguish word boundaries, and struggle to follow natural speech patterns will be unable to comprehend the lecture. From a content driven approach, however, language deficiencies may not necessarily impact comprehension as long as students are able to activate appropriate schema and incorporate new information. Students who perceive the vocabulary as too difficult or speech as too fast may still have the capacity to comprehend despite the linguistic difficulties. Likewise, students who have strong linguistic skills but lack relevant schema will fail to understand complex academic lectures. From this perspective, students' perceptions of linguistic difficulties may not be strong predictors of performance. To consider students perceptions' of barriers to listening comprehension and their relationship to performance, a study was administered on EFL students at a Japanese university.

Method

The study was conducted on first-year students enrolled in intermediate-level English courses at a private university in Japan. The students possess basic English capabilities but struggle with advanced-content commonly presented in university-level lectures. Students are thus trying to make the step from conversational fluency to academic language proficiency. The students received a 45-minute lecture on international relations that focuses on the recent North Korean missile crisis in Japan. Students are informed before the lecture that they will be tested on the presentation and receive extra credit based on their scores. The lecture is conducted in English by a guest lecturer who is a political scientist specializing in international relations and Japanese foreign policy. The content is consistent with that of a typical introduction to international relations course taught in a North American university. The students are introduced to three major theories of international relations using the prisoner's dilemma game. The theories are then applied to the case of the North Korean missile crisis that occurred in 2017 when multiple North Korean missiles entered Japanese airspace.

Following the lecture, students received a survey measuring their perceptions about the lecture and ten multiple-choice questions based on the presentation.[5] To examine perceived listening difficulties, students are asked if they had trouble understanding the lecture and why. Students are given a number of choices including, *the topic of the talk was too difficult, vocab was too difficult, speed was too fast* as well as a free response and students were instructed to choose as many as they like.

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5）All materials can be accessed at https : //doi.org/10.7910/DVN/WOPQOR (Hearn, 2018).

To measure comprehension, students' scores on the 10 question test were analyzed. A preliminary examination shows that 3 questions have a discrimination index below 25%.[6] These questions are removed from the analysis as they fail to distinguish between students with high and low levels of comprehension. Students who get over half of the questions correct are considered to have a basic mastery of the content. The dichotomous variable *proficiency* is generated with student scoring above 50% coded as 1 and all others coded as 0.[7]

Results of Survey

The results of the preliminary analysis are displayed in Figure 1. Over 90% of students reported some difficulty in understanding the lecture. The most common complaint is regarding content as 33% of students reported "topic difficulty" as a barrier to comprehension. This result is followed by two linguistic factors, vocabulary difficulty (25%) and speed of delivery (21%). About 13% of students indicated external problems including classroom temperature, presentation style, and a lack of interest.[8]

Students' scores on the listening comprehension test ranged from 14% to 100% indicating large variation in student listening-comprehension levels. This outcome was anticipated as the majority of assessments used for establishing language learners' course levels are based on reading and writing. Listening comprehension, however, demands different skills. As a result, reading and writing proficiency do not necessarily translate to listening (Osada, 2004).
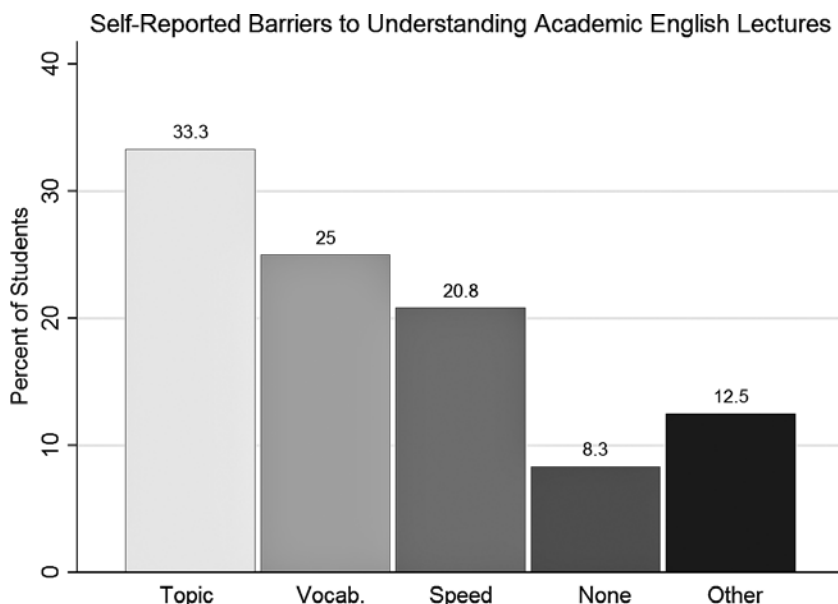

Figure 1　Barriers to Understanding Academic English

6）Question 1, question 9, and question 10 have a discrimination index below 25%. Discrimination index is calculated by subtracting the % correct in the lower group of test takers from the upper group (Brennan, 1972).

7）Proficiency is based on a median split. This approach is taken to account for the small number of observations (n = 19) which limit the reliability of a regression analysis. Students scoring above the median are commonly considered proficient in educational testing and training.

8）Students can list multiple perceived problems.

Table 1   Linguistic Difficulties and Academic Performance

Linguistic difficulty	Spearman Correlation Coefficient	Relationship
Topic too difficult	−.47 (.04)	Moderate (negative)
Vocab. too difficult	.42 (.08)	Moderate (positive)
Speed too fast	−.15 (.54)	Weak (negative)

P-values in parentheses

Consider the relationship between listening proficiency and perceived difficulties. Table 1 lists the correlation coefficient between perceived barriers to comprehension and proficiency. Interestingly, only *topic difficulty* shows a substantively meaningful relationship with proficiency in the anticipated direction. The correlation coefficient of −.43 for topic difficulty and proficiency indicates a moderate negative relationship.[9] Perception of the academic lecture topic as too difficult is thus associated with lower levels of listening comprehension consistent with schema theory. Furthermore, this relationship is statistically significant. The p-value of .04 indicates the probability of finding a relationship when none exists. When p is less than .05, it can be concluded with 95% confidence that the outcome is not the result of chance.

Vocabulary difficulty and speed, however, are not significantly correlated with proficiency. The relationship between vocabulary difficulty and proficiency is positive which suggests higher proficiency is related to perceptions of vocabulary being too difficult. Both the coefficients, however, fail to reach statistical significance. While vocabulary, p = .08, approaches conventional levels of significance (less than .1), it should be noted that the result is in the opposite direction from expectations, and it cannot be concluded with 95% confidence that the effect is not the result of chance. It is thus important to separate student perceptions of barriers to comprehension and observed outcomes.

Pre-Teaching Strategies

As detailed above, perceived content deficiencies are a strong predictor of student performance. It is not clear, however, what is driving these attitudes. On the one hand, perceptions of topic difficulty may arise from a lack of relevant schema. From this perspective, students need to build relevant schema to increase academic comprehension. Students may not have the neccessary knowledge and experience regardless of language skill. A number of studies have highlighted the effect of schema activation on listening comprehension (Ahour & Sakhaei, 2015 ; Ehsanjou & Khodareza, 2014 ; Farrokhi & Modarres, 2012 ; Mai, Ngoc, & Thao, 2014). If this content-driven perspective is correct, an increase in related schema should decrease perceptions of topic difficulty. The following hypothesis was made :

H1 (Schema-development hypothesis) : Activation of relevant schema leads to a reduction in perceived topic difficulty of academic lectures.

On the other hand, linguistic deficiencies may prevent some students from making the relevant connections thus leading to perceptions of topic difficulty. From this perspective language development

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9) Based on Cohen (1988)'s scale, correlation coefficients between .10 and .29 denote a weak association. .30 to .49 indicates a moderate relationship and .5 and above represents a strong relationship.

is preventing students from activating the appropriate schema even though they have sufficient topic knowledge. Students, for example, often emphasize a lack of vocabulary as a barrier to comprehension. The language-driven approach thus suggests that correcting language deficiencies will enhance students' comprehension. Even though language deficiencies are routinely emphasized by learners and professional language teachers, research on the relationship between language deficiencies and listening comprehension has produced mixed results. Vocabulary training, for example, has been found to increase scores on vocabulary tests and repetitive listening tasks but does not improve listening comprehension in a one-shot context such as a university lecture (Berne, 1995； Chang, 2007； Chang & Read, 2006； Elkhafaifi, 2005).

H2 (language-deficiency hypothesis)： A correction of language deficiencies leads to a reduction in perceived difficulty of academic lectures.

Experimental Design

The above hypotheses were tested in an experiment with students enrolled in intermediate-level English courses at a private university in Japan, as previously described. The design of the study is straightforward. Students are divided into three groups： a control and two treatment groups.[10] Each group receives the same 45-minute lecture on international relations that focuses on the recent North Korean missile crisis in Japan as previously described. The visuals, script, and time are kept consistent across the experimental groups.

Students in the treatment groups received one of two pre-teaching lessons prior to the lecture. The pre-teaching is conducted by the students' regular English teacher and consist of either a focus on vocabulary to be used in the lecture or an introduction to the principles of the prisoner's dilemma using a topic unrelated to international relations. The logic of the prisoner's dilemma treatment is that students will build schema related to the prisoner's dilemma allowing them to better comprehend the more difficult lecture that applies the prisoner's dilemma to international relations. The intention of the vocabulary treatment is to correct for possible language deficiencies that may hinder listening comprehension.

In order to activate relevant schema and background knowledge, the schema treatment group were pre-taught one week before the guest lecture. To familiarize students with the concepts that underlie the Prisoner's Dilemma, the teacher devoted approximately 20 minutes of class time to introduce two examples that are illustrative of the prisoner's dilemma. First, the teacher discussed Japanese cram school, *juku,* and asked students if they attended *juku* before and for what purpose. The teacher then introduced the concept of opportunity cost and pointed out the dilemma that students mainly attend *juku* to attain a higher score on the entrance exam relative to their peers, which requires a significant investment of time and money, but yields no comparative advantage if one's peers also attend *juku.* The teacher encouraged students to consider possible solutions to overcome this dilemma. The subsequent discussion about students banding together and agreeing not to attend *juku,* with the concomitant temptation of students to cheat by secretly attending *juku,* mirrors the dynamics of the prisoner's dilemma.

10） Students are divided into groups by class section. The choice of class section is not based on language capabilities and is treated as random assignment. Though some non-random factors may influence which section students chose.

The second example the teacher introduced was the use of cosmetics. The teacher elicited complaints from students about the time and money they spend on cosmetics, yet similar to the *juku* example, students gain no comparative advantage in relative attractiveness over peers who engage in the same behavior. The cosmetics and *juku* examples were used to facilitate students' ability to comprehend the prisoner's dilemma and strategic interaction. Lastly, for the first 7 minutes of class the day of the guest speaker, the teacher reviewed the *juku* example with students and had them recall what was discussed in the previous class.

Students in the vocabulary treatment were given a handout of 15 vocabulary items two weeks prior to the guest lecture. The vocabulary items were selected on the basis of being mostly words that students were unlikely to know and ones that were deemed crucial for comprehending the key points of the lecture. Included on the sheet were an English definition, Japanese definition, and an English example sentence for each vocabulary item.[11] The students were instructed to study the vocabulary items outside of class and were told that understanding the meanings and usages of the vocabulary items would aid their comprehension of the lecture.

The day of the guest lecture, the teacher devoted approximately 20 minutes at the beginning of class to review the vocabulary. First, the teacher explained the meaning of each vocabulary item and gave a typical example of how each one is used in a sentence. Next, students were asked to review the items by taking turns to quiz their partner by reading the English definition and having their partner recall and say the item out loud. If students couldn't recall the vocabulary, their partner provided them with letter hints (the first letter is…) until they could recall it. Finally, the teacher asked students if they had any questions about the vocabulary items whose meanings they may have been unsure about.

Following the lecture, students received the previously described survey and ten multiple choice questions based on the presentation. To test the hypothesis that activating schema decreases perceived topic difficulty, the dichotomous variable *difficult topic* is created with those expressing concern that the topic is too difficult coded as 1 and those not indicating that the topic was too difficult coded as 0. If the schema activation theory is correct, we would expect students in the *schema-treatment* group to view the topic of the talk as less difficult. If the language deficiency hypothesis is supported, an increase in familiarity to vocabulary should lead the *vocab-treatment* group to view the topic as less difficult.

Results of Experiment

The results of the experimental analysis lend support to the schema-development hypothesis. To examine the impact on schema development of perceived difficulty, we can compare the schema treatment group to the control group. The two groups received the same lecture and test. The only difference between the groups is the pre-teaching exercise one week prior to the lecture in which the schema-treatment group was introduced to the ideas that underlie the prisoner's dilemma in a context not related to international relations. This was intended to help build relevant schema to aid students' comprehension of the upcoming lecture. As displayed in Figure 3, students in the schema

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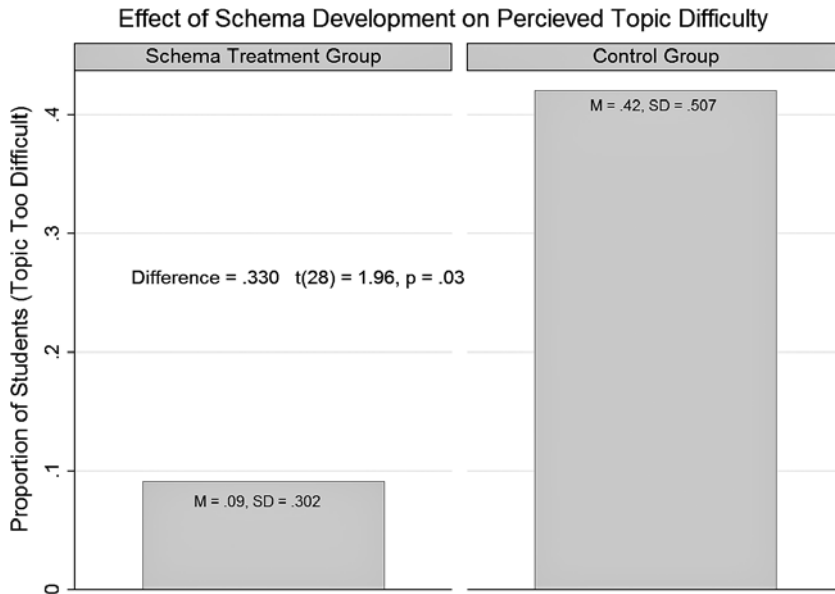11) Details on the vocabulary list and materials are available in the online appendix and can be accessed at https : //doi.org/ 10.7910/DVN/WOPQOR

Effect of Schema Development on Percieved Topic Difficulty

Schema Treatment Group	Control Group

M = .42, SD = .507

Difference = .330   t(28) = 1.96, p = .03

M = .09, SD = .302

Proportion of Students (Topic Too Difficult)

Figure 2　Effect of Schema Treatment

treatment group were less likely to view the topic as difficult, m＝.09, SD＝.302. This can be compared to the control group, m＝.42, SD＝.507. The difference between the schema-treatment group is large, .330, and statistically significant, p＝.03. Receiving the prisoner's dilemma pre-teaching treatment substantively and significantly impacted students' perceptions of the difficulty of the lecture. Because students were not exposed to vocabulary or even concepts related to international relations, this reduction in perceived difficulty likely results from the development of schema, not a reduction in language deficiency.

Next is an examination of the language-deficiency hypothesis. Students who lack specific or technical vocabulary may perceive academic lectures as too difficult. To test this relationship, we can compare the control group to the vocabulary treatment. Students in the vocabulary-treatment group were given a list of key words two weeks prior to the guest lecture and participated in activities to review the words the day of the guest lecture. The words and definitions provided, however, were not in the context of the talk. This is intended to emphasize the correction of language deficiencies rather than build cognitive schema. The results are displayed in Figure 4. The vocabulary treatment has no substantive or statistical impact on students' perceptions of topic difficulty. The vocabulary treatment group's reported topic difficulty, m＝.44, SD.512, is equivalent to those reported by the control group. We can thus conclude that the vocabulary treatment had no effect on students' perceptions of topic difficulty.

The findings speak to the importance of teaching higher-order skills and utilizing active learning in CBI courses. To achieve academic proficiency, students need not only language expertise but also the appropriate cognitive framework for the comprehension of academic English. This is not meant to suggest that specific vocabulary training is not useful for advanced language learners. Vocabulary training, however, should be constructed to not only correct language deficiencies but also develop related schema to aid in comprehension. This study purposefully utilizes a context-free vo-
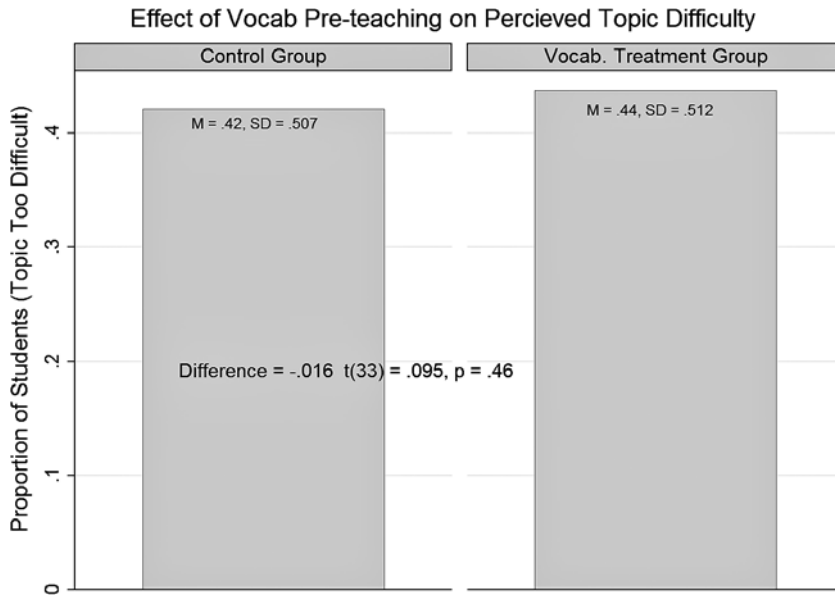
Effect of Vocab Pre-teaching on Percieved Topic Difficulty

Figure 3　Effect of Vocab Treatment

cabulary exercise to isolate the effect of schema activation and vocabulary. Students in the vocabulary treatment group did not report lower levels of perceived vocabulary difficulty suggesting that while language deficiencies may have been corrected, this knowledge did not transfer to the listening task. Vocabulary training would likely have a different effect if paired with schema development.

Last is an examination of the determinants of proficiency. Figure 4 shows the distribution of test scores. As can be seen, there is large variation in students' listening comprehension level. A probit analysis allows us to consider the anticipated change in the probability of reaching proficiency due to a number of variables. These results, reported in Table 2, should be considered preliminary as the small number of observations limits the reliability of the analysis. The analysis considers the effects of the treatments, student gender, perceived listening difficulties, interest and self-reported comprehension.[12] First, consider the effect of perceived barriers to comprehension. Topic difficulty is associated with a reduction in listening proficiency, $b = -1.12$. This effect is statistically significant, $p < .05$. Vocabulary difficulty and speed difficulty, on the other hand, are both positively correlated with comprehension. These effects are likewise found to be statistically significant but not in the anticipated direction.

The treatments did not have a direct impact on proficiency. The schema treatment, however, may have had an indirect effect on test scores by reducing perceived topic difficulty. Students in the schema-treatment group report significantly lower levels of perceived topic difficulty, and a decrease in perceived topic difficulty is associated with an increase in listening proficiency. The variable with the largest impact on student comprehension is interest in the topic. It is not surprising that students who are interested are engaged and motivated. This finding highlights the importance of cultivating student interests. Students' self-reported comprehension, on the other hand, does not impact profi-

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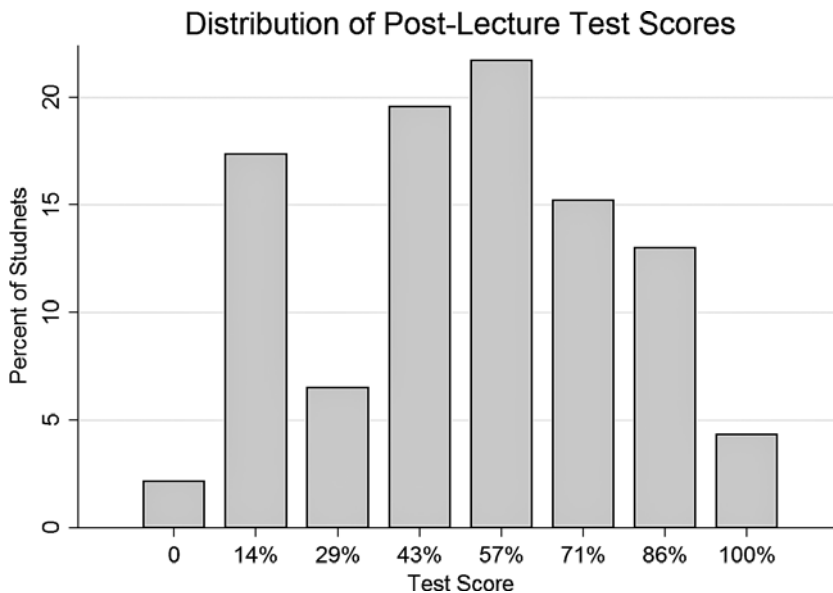12）See the online appendix for details available at https : //doi.org/10.7910/DVN/WOPQOR

Distribution of Post-Lecture Test Scores

Figure 4   Distribution of Post-Lecture Test Scores

Table 2   Determinants of Comprehension

VARIABLES	Model 1
Interest	0.670***
	(0.249)
Topic difficult	−1.126**
	(0.569)
Vocab. difficult	1.481***
	(0.569)
Speed difficult	2.080***
	(0.632)
Female	−1.407**
	(0.711)
Schema treat.	−0.917
	(0.658)
Vocab treat.	−0.581
	(0.666)
Comprehension	0.0272
	(0.214)
Constant	−4.586***
	(1.510)
Observations	46

Robust standard errors in parentheses
***p＜0.01, **p＜0.05, *p＜0.1
DV = Listening proficiency

Table 3   Predicted Probability of Proficiency

Variable	Probability of Passing		Difference
Gender (0,1)	Male = 0 .592 [.123, .950]	Female = 1 .120 [.008, .519]	.472 [.002, .799]
Interest (7−10) (Δ median-max)	Median Interest = 7 .120 [.008, .519]	High Interest = 10 .799 [.201, 994]	-.679 [-.890, -.121]
Topic Difficulty (0,1)	No = 0 .120 [.008, .519]	Yes = 1 .011 [.000, .131]	.109 [.000, .457]

Monte Carlo simulations (n = 100,000) calculated with coefficients and standard errors from Model 1 in Table 2. All variables set to median score. 95% confidence interval in brackets

ciency. Female students are found to score significantly lower than male students. It should be noted, however, that there is a relatively small number of male students in the sample. 78% of the participants are female.

Predicted probabilities can be calculated to highlight both the statistical and substantive impact of the variables on student listening proficiency (Table 3). Predicted probabilities are constructed by conducting Monte Carlo simulations. 100,000 random draws are made using the coefficients and standard errors from Model 1 in Table 2. The coefficients are converted to the probability of scoring proficient (y = 1). We can thus calculate the effect of different variables while controlling for other factors by holding them at their average (median).

First, regarding the impact of gender on academic listening proficiency while holding all other variables at their average, the average male student has a .59 probability of reaching proficiency. The average female student has only a .12 probability of scoring above the median. This difference of .47 is large and statistically significant ($p < .05$). Next, as for the impact of perceived topic difficulty a student who perceives the topic of the talk as too difficult, ceterus paribus, has only a .01 probability of comprehending the lecture. A student who doesn't perceive the topic as too difficult on the other hand has a .12 probability of proficiency. This difference is substantively large and statistically significant ($p < .05$). Finally, regarding the substantive impact of interest, a student, all else equal, who has a high interest in the topic has an 80% chance of scoring above the median. A student with average interest in the topic has a 12% chance of reaching proficiency.

Discussion

These preliminary findings have important implications for English education in Japanese universities. First, the proper placement of students is paramount for the success of CBI. Listening skills are a large component of CBI but students' academic listening-comprehension level is seldom considered when determining course placement. As previously noted, listening ability is not necessarily equivalent to reading and writing skills. Results from this study demonstrate a remarkable variation in listening comprehension between students tracked into the same level English course. A number of studies have demonstrated that CBI can lead to a failure in language development as well as increased stress for students (Butler, 2005). While future research should specifically examine the relationship between student levels and the effectiveness of CBI, it is unlikely that students receiving too difficult content will excel in content or language learning. It is thus important to establish new criteria for placing students in content-based courses as opposed to following guidelines constructed for non-content based classes that do not involve high-level academic lectures.

Second, to prepare students for EMI courses or study abroad, it is important to help students develop the appropriate schema. This means that content-based courses should be designed to give students the background knowledge necessary for understanding the content of university coursework. Close attention has to be given to the skills and topics covered or CBI will not aid students in making the leap to academic language proficiency.

There are three major approaches to designing a content-based course ; sheltered learning, adjunct model, and theme-based (Brinton, Snow, & Wesche, 2003). Following the sheltered-learning approach, students are exposed to a typical course taught by a content specialist that may include specially designed instruction to make the material easier to understand as well as tutoring from language instructors. The adjunct model is the combination of two courses, a language course and a content course, in which language instructors and content specialists collaborate to create complimentary courses. Students thus receive high level content instruction as well as dedicated language support. Under the theme-based approach, the course is usually taught by a language instructor and focuses on a specific theme to provide a starting point for teaching the target language.

The majority of courses in Japanese universities fall into the theme-based category. In theme-based courses, however, students may not be developing the proper schema to transition to academic competency. It is thus important for language teachers and content specialists to work together. Advanced students would benefit from a sheltered-learning approach by pairing language instruction

with EMI courses or having content instructors develop delivery strategies to support the needs of the students. For intermediate students, an adjunct model would be beneficial to ensure that students are receiving both university-level content exposure and language support. However, whether using a theme-based, adjunct, or sheltered approach, increased cooperation and collaboration between language instructors and content specialists is key. Content specialists can provide training to language specialists on topic areas and expectations when designing theme-based courses. Language teachers can help content specialists develop teaching strategies for conducting a sheltered course. And finally language instructors and content specialist can work in unison to build complimentary courses under the adjunct approach.

Conclusion

Transitioning from basic conversation fluency to academic language proficiency is a challenging endeavor. The above analysis has considered students' perceptions toward academic lectures, their relationship to comprehension, and their determinants. It is found that almost all students perceive comprehension of academic lectures as difficult. Students' perceptions, however, do not directly relate to comprehension. Particularly students who cite difficulty with vocabulary and speed of delivery are found to record higher levels of listening proficiency. On the other hand, perceived topic difficulty is strongly correlated with lower levels of listening ability. The experimental results are consistent with schema theory in that the availability of relevant schema is the key component of comprehension. Students exposed to exercises to develop relevant schema report much lower levels of perceived topic difficulty. Conversely, language deficiency is found to have no impact on students' attitudes. Finally, the largest factors found to influence student listening comprehension are student interest and perceived topic difficulty.

It is important to emphasize the limitations of this study. Listening comprehension remains an understudied skill in language learning. Even fewer studies consider listening comprehension in the context of university-level academic content in an EFL setting. Despite this relative shortage of accumulated knowledge, academic English is being increasingly incorporated into Japanese universities. This study, while making an effort to assess students' perceptions towards academic listening comprehension as well as evaluate pre-teaching techniques, faces a number of limitations. Most notable is the small number of observations. Because of the small sample size, the study suffers from micronumerosity making the interpretations of the findings less certain. The study may be biased toward producing null results, as was the case with the vocabulary treatment, as well as being sensitive to minor changes in observations such as dropping/adding a case or model specification. Collecting more data on larger and more diverse samples is therefore essential.

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