An Investigation of Chinese EFL Learners' Perceived Comprehensibility of Nine English Accents[*]

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With the emergence of different varieties of English in the world, the issue of intelligibility has attracted many researchers' attention. While a large number of studies have focused on the intelligibility of different English varieties for native speakers, few of them have involved Chinese learners of English as participants; yet, they constitute the largest group of non-native English speakers. The current study aims to investigate Chinese university students' perceived comprehensibility, i.e., intelligibility judgments, of nine English accents, including British, American, Australian, Indian, Philippine, Singaporean, French, Japanese, and South Korean English. Thirty-nine English major sophomores from a top university in China were invited to identify the speakers' nationalities and assign ratings for their perceived comprehensibility of the nine English accents. A follow-up semi-structured interview was also undertaken. It was found that all of the participants could identify American English and most of them could also recognize British, Australian and South Korean English. In contrast, they could hardly recognize the other five English accents. With regard to perceived comprehensibility, the Inner Circle English accents on the whole are significantly more comprehensible than the Outer Circle and Expanding Circle English accents. Chinese university students' perceived comprehensibility significantly correlates with properties of the speech. Moreover, it was observed that familiarity with English accents and speech properties may interplay and influence perceived comprehensibility. The study contributes to the ongoing literature on intelligibility and provides pedagogical implications for English education.

Keywords: intelligibility, perceived comprehensibility, World Englishes

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1 Introduction

In recent decades, many varieties of English have emerged and developed as a result of contact between English and diverse languages and cultures. Kachru (1985) proposed his influential "Three Concentric Circles" theory to describe the spread and use of English in various settings around the world. According to this theory, the Inner Circle consists of countries where English is used as mother tongue and performs all kinds of functions, such as the UK, the USA, Australia, Canada and New Zealand. The Outer Circle refers to the ex–colonies of Britain or America where English is now used as a second or an official language and as the medium of communication in domains like government, law, education and media. Singapore, Malaysia, Nigeria, India and the Philippines are typical examples. The Expanding Circle comprises countries such as China, Japan, France, and South Korea, where English has no official status and is used as a foreign language for international communication. With the emergence of different varieties of English, a number of scholars have raised the issue that English may become a mutually unintelligible language and investigated the intelligibility of different English varieties, such as Indian English, Philippine English, Hong Kong English, South African English, Japanese English and Korean English (e.g., Dayag, 2007; Kirkpatrick, Deterding, & Wong, 2008; Smith & Bisazza, 1982; Smith & Rafizqad, 1979; Suenobu, Kanzaiki, & Yamane, 1992; Tsuzuki & Nakamura, 2009; Van der Walt, 2000). They have also explored the factors influencing intelligibility, including speech properties, language proficiency, familiarity with English accents, topic, shared background, and so on (e.g., Edwards, Zampini, & Cunningham, 2018; Gass & Varonis, 1984; Orikasa, 2016).

Early researchers often focused on native speakers' intelligibility of different English varieties. More recent years has witnessed a change from using native English speakers to using non-native English speakers as judges, given the reality that non-native English speakers have far outnumbered native English speakers and more interactions in English occur among non-native speakers. Extensive research has been carried out to examine non-native English speakers' intelligibility judgments of different English accents (e.g., Dayag, 2007; Derwing & Munro, 1997; Kim & Lee, 2013; Matsuura, Chiba, & Fujieda, 1999; Rooy, 2009). However, very few studies have involved Chinese learners of English as listeners, and yet they constitute the largest group of non-native English speakers (Jenkins, 2015).

To address the lack, the present study aims to investigate Chinese EFL learners' intelligibility judgments of nine English accents, including three Inner Circle varieties, namely British English, American English and Australian English, three Outer Circle varieties, i.e., Indian English, Philippine English and Singaporean English, and three Expanding Circle varieties, that is, French English, Japanese English and South Korean English.

This study may contribute to the ongoing literature on intelligibility and provide some pedagogical implications for English teaching, especially in Expanding Circle countries.

2 Literature Review

2.1 The intelligibility construct

With the unprecedented spread of English in global contexts, there naturally appears the concern that speakers of different English varieties might not be readily intelligible to each other. Given this concern, intelligibility has become one of the most important goals of English learning and teaching and has stimulated considerable interest in the academic community. Some researchers have had intense discussions on the concept of intelligibility (Catford, 1950; Derwing & Munro, 1997; Jenkins, 2000; Munro, Derwing, & Morton, 2006; Nelson, 2008, 2018; Smith, 1992; Smith & Nelson, 1985; Smith & Rafiqzad, 1979).

Catford (as cited in Nelson, 2008) was the forerunner to address the notion of intelligibility. He holds that intelligibility necessarily "involves understanding of the linguistic elements and some appropriate response, reflecting clear and purposeful encoding on the part of the producer of a speech and successful decoding by the receivers" (p. 299). He also put forward "a threshold of intelligibility" (p. 299), arguing that the more familiar a speaker is with a variety of speech, the lower his intelligibility threshold is.

Smith and Rafiqzad (1979) defined intelligibility as "the capacity for understanding a word or words when spoken/read in the context of a sentence being spoken/read at natural speed" (p. 371). Smith and Nelson (1985) set forth a nuanced tripartite framework of intelligibility, comprehensibility and interpretability, where intelligibility is defined as "word/utterance recognition", comprehensibility as "word/utterance meaning (locutionary force)", interpretability as "meaning behind word/utterance (illocutionary force)" (p. 334). Smith (1992) further emphasized that "these three categories could be thought of as degrees of understanding on a continuum, with intelligibility being lowest and interpretability being highest" (p. 76).

Jenkins (2000) agreed with Smith and Nelson's three-component system of intelligibility, but she disagreed on Smith's claims that intelligibility involved the fewest variables and was the least difficult component. Her definition of intelligibility "regards [the ability to produce and receive phonological form] as a prerequisite (though not a guarantee) of ILT [Interlanguage Talk] success at the locutionary and illocutionary level" (p. 79). She places fundamental importance on intelligibility in its strict sense, that is, word/utterance recognition.

Derwing and Munro (1997) and Munro, Derwing, and Morton (2006)

used the terms of intelligibility and comprehensibility introduced by Smith and Nelson (1985). They defined intelligibility as "the extent to which a speaker's message is actually understood" by a listener, and comprehensibility as "the listener's estimation of difficulty in understanding an utterance" (Munro et al, 2006, p. 112). Their definition of comprehensibility is quite different from Smith and Nelson (1985) in that it is more concerned with the listeners' subjective judgments of speech samples and hence is consistently called "perceived comprehensibility" by many scholars in the literature.

Although many researchers have attempted to define intelligibility, they have failed to reach a consensus on the intelligibility construct. In this paper, intelligibility refers to people's actual understanding of one speech when it is spoken at natural speed, and perceived comprehensibility is defined as the listener's estimation of his or her difficulty/easiness in understanding a message, in line with Munro et al. (2006). In other words, perceived comprehensibility is the listener's subjective judgments of intelligibility.

2.2 Previous studies on intelligibility of English varieties

A great number of empirical studies have been undertaken to examine the intelligibility of different English varieties (e.g., Deterding & Kirkpatrick, 2006; Kirkpatrick et al., 2008; Matsuura, 2007; Rooy, 2009; Smith, 1992; Zhang, 2015). Many were focused on the intelligibility of one specific English variety in the Outer Circle, in the hope of proving the legitimacy of that variety, such as Indian English (Bansal, 1969), South African English (Van der Walt, 2000), Philippine English (Dayag, 2007), and Hong Kong English (Kirkpatrick et al., 2008; Sewell, 2015). For example, Kirkpatrick et al. (2008) explored the international intelligibility of educated Hong Kong English by analyzing Hong Kong university students' conversations with a British expatriate lecturer. They found that Hong Kong English was highly intelligible for university students in Singapore and Australia and suggested with caution that the appropriately trained Hong Kong English could serve as a classroom model. In contrast with Kirkpatrick et al, Sewell (2015) focused on the intranational intelligibility of Hong Kong English accents. Ninety one Hong Kong listeners were required to transcribe the speech samples obtained from Hong Kong media broadcasts in English. The results showed that consonantal modifications reduced intranational intelligibility.

Apart from examining the intelligibility of Outer Circle English varieties, a lot of scholars have also focused on Expanding Circle countries, where English is more often used as a foreign language for international communication, such as Japan (e.g., Kashiwagi & Snyder, 2008; Saito & Shintani, 2015; Suenobu et al., 1992; Tsuzuki & Nakamura, 2009), South Korea (e.g., Kim & Lee, 2013; Rooy, 2009), and China (e.g., Munro &

Derwing, 1995). Native speakers of English were often employed as the sole or major judges in these studies. For example, Munro and Derwing (1995) examined the accentedness, intelligibility and comprehensibility of English spoken by Mandarin Chinese studying in Canada. Eighteen native speakers of English were required to transcribe the speech samples, assign ratings for perceived comprehensibility and accentedness on a 9-point Likert scale. The results indicated that listeners tended to assign harsher scores, but a strong foreign accent did not necessarily lead to the loss of intelligibility or comprehensibility.

Besides investigating the intelligibility of a specific English variety, researchers have also compared the intelligibility levels of different English varieties from the Inner Circle, Outer Circle and Expanding Circle. One pioneering intelligibility study of this kind was Smith and Rafizqad (1979), which compared the intelligibility levels of native and non-native English varieties. A total of 1,386 educated people from 11 countries in the Outer Circle and the Expanding Circle were asked to listen to nine speech samples representing speakers of English from different regions. By using a cloze test and a listening comprehension questionnaire, Smith and Rafizqad found that listeners kept a high level of consistency on the degree of intelligibility of nine different varieties and their intelligibility scores highly correlated with their perceived comprehensibility. One ground-breaking conclusion was that native speaker phonology did not appear to be more intelligible than non-native phonology, which refuted the commonly held hypothesis that native English speakers are more intelligible than non-native ones. This conclusion was further verified by Smith's (1992) investigation of the degree of intelligibility, comprehensibility and interpretability of nine national varieties of English for native and non-native English speakers. Smith concluded that familiarity with several different English varieties made it easier for listeners to interpret cross-cultural communication in English.

Smith and Bisazza (1982) compared the comprehensibility levels of American English, Indian English and Japanese English for native and non-native judges. A total of 210 university students in the United States and six Asian countries or areas including Hong Kong, Indian, the Philippines, Japan, Taiwan and Thailand were asked to complete the Michigan Test of Aural Comprehension (MTAC), Forms A, B and C. The results suggested that the American speaker was the most comprehensible one, followed by Japanese and Indian speakers. They explained that the greater exposure people had to a certain English variety, the more comprehensible that variety of English was for those people. In line with Smith and Rafiqzad (1979), Smith and Bisazza (1982) also used non-native speakers of English as judges of their intelligibility study, indicating researchers' increasing awareness of the importance of non-native English speakers in judging intelligibility.

Derwing, Munro and their colleagues conducted various studies on the intelligibility of different varieties of English (Derwing & Munro, 1997;

Munro & Derwing, 1995; Munro et al., 2006). They reported that non-native English speeches were highly intelligible for native English speakers; accentedness, intelligibility and perceived comprehensibility were partially independent dimensions (Munro & Derwing, 1995). They also found that familiarity contributed to accent identification, which facilitated intelligibility (Derwing & Munro, 1997). Moreover, they suggested that properties of the speech itself, especially the acoustic-phonetic characteristics, greatly influenced listeners' responses to intelligibility, comprehensibility and accentedness (Munro et al., 2006).

Deterding and Kirkpatrick (2006) identified shared pronunciation features of ASEAN Englishes, such as dental fricative /Ө/ as [t] and heavy end-stress, and assessed the role of these shared features in maintaining intelligibility. They analyzed the semi-informal conversations elicited from 20 speakers, 2 from each of the ASEAN countries. The results showed that none of the shared pronunciation features led to intelligibility failures but those pronunciation features not shared by other ASEAN countries resulted in misunderstandings. Wilang and Teo (2012) examined the comprehensibility of ASEAN's Outer Circle Englishes for the Expanding Circle citizens within ASEAN countries. The findings indicated that English varieties in the Outer Circle were moderately comprehensible for citizens in the Expanding Circle although the latter demonstrated varying degrees of comprehensibility towards the former. They further mentioned that the Expanding Circle citizens' comprehensibility was affected by their language proficiency, familiarity with different English varieties and also attitudes towards speakers.

Due to the employment of different definitions and assessing methods of intelligibility, previous studies have obtained inconsistent findings. For instance, Hong Kong English was found to be rather unintelligible for 1,386 nonnative English speakers in Smith and Rafizqad's (1979) study, but it was highly intelligible for university students in Singapore and America in Kirkpatrick et al.'s (2008) study. Despite the inconsistent results, some universal findings have also been observed. Firstly, Inner Circle English varieties are not necessarily more intelligible than non-native English varieties in the Outer Circle and the Expanding Circle. Secondly, instead of making native English speakers the sole judges of intelligibility, non-native English speakers should also play a significant role in intelligibility judgments. Thirdly, speech properties and familiarity with different English varieties have been found to influence listeners' intelligibility judgments. Although fruitful, very few previous studies have focused on the intelligibility of different English varieties for Chinese speakers of English. As China has the largest group of English learners and is participating actively in international affairs in recent decades, Chinese learners' comprehensibility of different English accents may play a part in inter-cultural communication.

Therefore, the present study aims to investigate Chinese university students' perceived comprehensibility of nine different English accents from three Kachruvian circles and explore the potential factors that may influence their intelligibility judgments. Three major research questions are addressed:

1. How accurately can Chinese university students identify different English accents?

2. What is Chinese university students' perceived comprehensibility of different English accents?

3. What's the relationship between their perceived comprehensibility and the speech properties of different English speakers?

3 Research Method

3.1 Participants

A total of 39 English major sophomores from a top university in China voluntarily participated in the study in 2018. They were from an intact class taking an elective course on linguistics. There were 7 males and 32 females, ranging from 18 to 20 years old and their average age was 19.46 years. They had been learning English as a foreign language for an average of 10.38 years and none of them had resided in an English-speaking country by the time of the study. They have all just passed TEM4 (Test for English Majors Band 4), which is a national English proficiency test for English major students in China. A passing grade suggests that the participants have generally reached the intermediate level of English proficiency, parallel to $B1^+$ level in CEFR (Liu, 2012).

3.2 Instruments

The instruments employed in the present study include 9 recordings, a questionnaire, and a semi-structured interview.

3.2.1 Recordings
The speech samples used in this study were selected from an existing speech corpus, *International Dialects of English Archive*, which houses a large number of speech accents from various linguistic backgrounds. For the compilation of this archive, English speakers were asked to read aloud one passage, either *Comma Gets a Cure* or *Rainbow*, and carefully recorded. Each recording is accompanied with transcriptions and the speaker's detailed biographic information, serving as an invaluable tool for conducting research on foreign accents. For the current study, recordings were chosen from

speakers who read the passage *Comma Gets a Cure*[1], which consists of 377 English words (see Appendix 1). As many speakers of the same accent have been recorded, the following criteria have been applied to select the target recordings: (1) female[2]; (2) born and lived in capital or large cities in her country; (3) relatively short length of English residence for non-native English speakers; (4) demonstrating phonetic features of their respective English accents. The phonetic cues of each recording have been checked to ensure that they are consistent with the phonetic characteristics reported as common and typical for each accent in the previous literature on World Englishes, such as Kirkpatrick (2007) and Schneider (2011)[3]. In total, nine speakers' recordings have been selected, including British, American, Australian, Indian, Philippine, Singaporean, French, Japanese and South Korean English accents. The speakers' age ranged from 19 to 66, with an average age of 33.6 years.

3.2.2 Questionnaire

The questionnaire consists of two sections (see Appendix 2). The first section attempts to gather the participants' background information, such as gender, age, and length of English learning. The second section aims to initiate the participants' identification and perceived comprehensibility of the nine English accents. For each accent, there are two items. The first item asks the participants to identify the nationality or accent of the speaker. The second item asks the participants to respond to five statements concerning perceived comprehensibility and specific speech properties (pronunciation, speed, intonation, fluency) on a 5-point Likert scale. A response of 1 indicates "completely disagree" and 5 is "completely agree".

3.2.3 Interview

After the survey, six students voluntarily participated in a semi-structured one-to-one interview consisting of four questions. Question 1 examines students' familiarity with and perceptions of different English accents. Question 2 asks students if they think that some English accents are more intelligible than others. Questions 3 and 4 aim to figure out the easiest and the most difficult English accents among the nine English accents they have heard.

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[1] Copyright 2000. Douglas N. Honorof, Jill McCullough & Barbara Somerville. All rights reserved.

[2] Due to data limitation, a female Singaporean speaker could not be found in the archive. Therefore, the speaker of Singaporean English accent is a male.

[3] I am very grateful for the anonymous reviewers for pointing out the importance of checking phonetic features with previous research. The phonetic transcription of each speech sample can be found at the *International Dialects of English Archive*.

3.3 Data collection and analysis procedures

The data was collected during a regular English class. The participants were asked to listen to the English accents while filling up the questionnaire. When each recording was played, two minutes was given for them to identify the English accent and make their subjective estimations. Then the next recording would be played. To avoid the influence of familiar accents, the recordings were played in the following order: French English, Japanese English, South Korean English, Indian English, Philippine English, Singaporean English, British English, American English and Australian English, namely from the Expanding Circle to the Inner Circle English accents[4]. When the questionnaires were completed and collected, which took about 30 minutes, six students participated in a one-to-one interview. Each interview lasted for about 10 minutes and was tape-recorded and later transcribed for qualitative analysis.

The quantitative data collected from the questionnaire was analyzed by using SPSS 21.0. Data analysis mainly included the following steps: (1) descriptive statistics of identification data; (2) descriptive statistics and t-tests of the participants' perceived comprehensibility of the nine English accents; (3) correlation between perceived comprehensibility and speech properties.

4 Results

4.1 Identification of English accents

Table 1 summarizes the frequencies and percentages of accurate identification of different English accents. The average accuracy rate is also shown.

Table 1. Participants' Identification of Accents

Identity	Frequency	Accuracy rate （%）
British	34	87.18
American	39	100
Australian	29	74.36
Indian	9	23.08

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[4] The participants could understand the passage better when they listened to the speech samples presented later. However, this may not always be the case. Our study found that although Australian English was presented the last, its perceived comprehensibility was lower than that of British or American English accents. Familiarity may be a stronger influence, and that's why familiar accents were presented later than unfamiliar accents in this study. I am very thankful for the anonymous reviewers for pointing out this issue.

Philippine	0	0
Singaporean	7	17.95
French	0	0
Japanese	6	15.38
South Korean	29	74.36
Average	17	43.59

As presented in Table 1, the average accuracy rate for recognizing the nationality or English accent of each speaker is not satisfactory, being merely 43.59%. There are striking differences in identifying different English accents. American English accent could be identified by all the participants, with the accuracy rate being 100%. The next highest accuracy rate is with British English (87.18%), followed by Australian and South Korean English with the same accuracy rate (74.36%). The other five English accents could hardly be identified, with the accuracy rates all below 25%. The participants had the poorest performance in recognizing Philippine English and French English, as none of them had given the correct answer.

4.2 Perceived comprehensibility and speech properties

4.2.1 Results of perceived comprehensibility
In the current study, perceived comprehensibility was measured by analysing the participants' responses to the statement "I can easily understand the passage" in the questionnaire. A response of 1 indicates "completely disagree" and 5 "completely agree". Table 2 presents the Mean (M) and Standard Deviation (SD) of perceived comprehensibility of each accent.

Table 2. Descriptive Statistics of Perceived Comprehensibility

English Accents	*M*	*SD*
British English	4.56	.82
American English	4.72	.65
Australian English	4.13	.86
Indian English	2.72	0.92
Philippine English	3.72	.94
Singaporean English	3.77	.93
French English	2.72	.69
Japanese English	2.87	.73
South Korean English	3.18	.82

As shown in Table 2, American English (*M*=4.72) was considered most comprehensible by the participants, followed by British English (*M*=4.56) and Australian English (*M*=4.13). All the three Inner Circle accents received high ratings in terms of perceived comprehensibility (*M*>4). Singaporean English (*M*=3.77) and Philippine English (*M*=3.72) were considered moderately comprehensible (3.5<*M*<4), and South Korean English was relatively comprehensible (3<*M*<3.5). In contrast, Japanese English (*M*=2.87), Indian

English (*M*=2.72) and French English (*M*=2.72) were perceived to be less comprehensible for the participants (*M*<3). The perceived comprehensibility of the nine English accents has the following ranking:

American > British > Australian > Singaporean > Philippine > South Korean > Japanese > Indian/French

Table 3 summarizes the average means of perceived comprehensibility of the Inner Circle, Outer Circle and Expanding Circle English accents as groups. Table 4 presents paired-samples t-test results between the three groups of accents.

Table 3. Perceived Comprehensibility of Three Groups of Accents

Accents	Inner Circle	Outer Circle	Expanding Circle
M	4.47	3.40	2.92

Table 4. Paired-Samples *t*-test Results

Pairs	Mean difference	*t*	*df*	Sig. (2-tailed)
Inner-Outer	1.07	10.130	38	.000
Outer-Expanding	.48	3.932	38	.000
Inner-Expanding	1.55	14.260	38	.000

Tables 3 and 4 demonstrate that the participants considered the Inner Circle accents on the whole as significantly more comprehensible than the Outer Circle accents, which in turn were considered significantly more comprehensible than the Expanding Circle accents.

4.2.2 Results of speech properties
The participants' subjective judgments of speech properties of the nine English accents were also analyzed. Table 5 demonstrates the descriptive statistics of specific speech properties of each sample, including pronunciation, speed, intonation and fluency.

Table 5. Descriptive Statistics of Speech Properties

	Pronunciation		Speed		Intonation		Fluency	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
British English	4.79	.52	4.41	.79	4.79	.52	4.87	.41
American English	4.87	.41	4.82	.45	4.87	.41	4.90	.45
Australian English	4.31	.77	4.41	.79	4.18	.91	4.59	.72
Indian English	2.95	.86	3.67	1.06	2.82	.79	3.49	.79
Philippine English	3.97	.84	4.21	.61	3.64	.84	4.15	.81
Singaporean English	4.08	.74	2.82	1.00	4.00	.79	4.67	.53
French English	3.03	.93	3.69	.86	2.74	.82	3.54	.79
Japanese English	2.59	.72	3.36	.96	2.41	.72	2.49	.91
South Korean English	3.08	.81	3.56	.88	2.85	.81	2.82	1.12

In terms of pronunciation, American English (M=4.87), British English (M=4.79), Australian English (M=4.31) and Singaporean English (M=4.08) were perceived to be very clear and intelligible by the participants (M>4). Philippine English (M=3.97) was rated as moderately clear (3.5<M<4). South Korean English (M=3.08) and French English (M=3.03) were relatively clear (3<M<3.5). In contrast, Indian English (M=2.95) and Japanese English (M=2.59) were rated as unclear (M<3).

With regard to speed, Chinese university students agreed that the speed of four English speakers is neither too fast nor too slow, including American English (M=4.82), British English (M=4.41), Australian English (M=4.41) and Philippine English (M=4.21). Three speech samples were perceived to be spoken at a moderately proper speed, including French English (M=3.69), Indian English (M=3.67) and South Korean English (M=3.56). The speed of the speech sample of Japanese English (M=3.36) was considered relatively proper (M<3.5) and Singaporean English (M=2.82) had the lowest rating in speed (M<3).

With respect to intonation, American English (M=4.87), British English (M=4.79), Australian English (M=4.18) and Singaporean English (M=4.00) were considered natural and pleasant to the ears (M>=4). Philippine English (M=3.54) was moderately natural in intonation (3.5<M<4). South Korean English (M=2.85), Indian English (M=2.82), French English (M=2.74) and Japanese English (M=2.41) all had rather low ratings in intonation (M<2.5).

As for fluency, the participants perceived American English (M=4.90) and British English (M=4.87) as highly fluent, followed by Singaporean English (M=4.67), Australian English (M=4.59) and Philippine English (M=4.15). French English (M=3.54) and Indian English (M=3.49) were considered moderately fluent (3.5<M<4) and relatively fluent (3<M<3.5), respectively. South Korean English (M=2.82) and Japanese English (M=2.49) had the lowest ratings in fluency (M<2.5).

On the whole, the Inner Circle English accents, especially American English and British English were rated highly positively in terms of pronunciation, speed, intonation and fluency. In contrast, South Korean English, French English, Indian English and Japanese English were consistently given the lowest ratings in all the above four speech properties.

4.3 Results of correlation

Correlation was conducted to analyze the relationship between the participants' perceived comprehensibility and their subjective responses to speech properties. Table 6 shows the correlation coefficients between variables.

Table 6. Correlations Between Perceived Comprehensibility and Speech
Properties

Perceived comprehensibility	Pronunciation	Speed	Intonation	Fluency
British English	.830**	.448**	.769**	.613**
American English	.854**	.723**	.755**	.808**
Australian English	.575**	.192	.570**	.428**
Indian English	.450**	.253	.328*	.231
Philippine English	.553**	.510**	.630**	.470**
Singaporean English	.600**	.209	.605**	.320*
French English	.464**	.383*	.383*	.482**
Japanese English	.048	.142	.254	.174
South Korean English	.573**	.509**	.436**	.264

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

As demonstrated in Table 6, the participants' perceived comprehensibility
significantly correlates with all the speech properties for four English accents,
namely, British English, American English, Philippine English and French
English. Perceived comprehensibility significantly correlates with
pronunciation and intonation for almost all the English accents, except
Japanese English. It also significantly correlates with fluency for six English
accents, excluding Indian English, Japanese English and South Korean
English. Significant correlation was also found between perceived
comprehensibility and speed for five English accents, including British
English, American English, Philippine English, French English and South
Korean English.

In general, although no significant correlation was observed between
perceived comprehensibility and the four speech properties for all the nine
English accents, what was interesting was that the participants' perceptions of
pronunciation and intonation correlate with their perceived comprehensibility
at significant levels for almost all the English accents.

4.4 Qualitative results

The interview with six students presented two major factors that may
influence the judgment of comprehensibility, namely, familiarity with accents
and speech properties of the accents.

4.4.1 Accent familiarity
In the present paper, familiarity with English accents has been perceived to
be an important factor according to the participants' responses in the
interview with regard to the question "In your daily life, what English accents
are you frequently exposed to and how do you think of those accents?" A
rather consistent result is that American English, British English and China

English[5] were often mentioned and perceived to be their frequently exposed accents, as they often hear these accents when communicating with their English teachers and watching TV dramas or films. For example, some interviewees are introduced as follows:

Interviewee 1: "British English and American English. I hear these two English accents from my foreign teachers. Sometimes I am also exposed to Australian English. But I think that British English and American English are easier to understand."

Interviewee 2: "I often listen to China English, American English and British English. British English is not so easy to understand sometimes, but the other two English accents are very easy to understand."

Interviewee 4: "In my daily life, I am often exposed to British English and American English. But when I traveled to some places, I also heard Australian English and French English. But for me, British English and American English are more intelligible, because Australian English and French English are strongly accented and pronounce words in a different way, which might cause misunderstandings."

To further investigate if their familiarity with or previous exposure to English accents influenced their intelligibility judgments, the participants were asked the question "Do you think some English accents are more intelligible than others? Why?" Their responses were basically in line with their answers to the first question, indicating the importance of familiarity with English accents in their intelligibility judgments. For example, some interviewees are presented as follows:

Interviewee 1: "Yes, I agree. American English is easier to understand than the other English accents. Since I started learning English, I have listened to American English. Thus, I can understand it well."

Interviewee 4: "I think so. For example, American English and British English are easier to understand than most of the other English accents. The first reason might be that since I studied English, I have been frequently exposed to British English and seldom to other English accents. The second reason might be that other English varieties are strongly accented."

Interviewee 6: "American English and British English are more intelligible. Since we started to learn English, we have been frequently exposed to these two English accents. Except these two English accents, we do not have much chance to listen to other English accents, such as Philippine English, French English, or Japanese English. The greater exposure we have for an English accent, the better we can understand it."

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[5] In this paper, the term China English refers to the Chinese variety of English, following the suggestion of Jiang (1995).

With regard to the question concerning the most difficult English accent, no participants considered their frequently exposed English accents to be difficult to understand. The English accents that they perceived to be most difficult were those they had less or no exposure. For example, some interviewees are introduced as follows:

Interviewee 3: "I think the fourth one (Indian English) is the most difficult one. I could not even know what he was talking about."

Interviewee 5: "It might be the first one (French English), because it was the first time for me to listen to this accent. I feel like that all the words uttered by the speaker are mixed together and I can't hear them clearly."

Interviewee 6: "Maybe the second one (Japanese English), because I am not familiar with this English accent."

The participants' answers to the above three questions suggest that their familiarity with specific English accents apparently affects their intelligibility judgments of those accents. The greater exposure they have had for a certain English accent, the better they feel they can comprehend that accent. It is likely that familiarity with some English accents helps facilitate Chinese students' confidence and comprehensibility in listening.

4.4.2 Speech properties

Speech properties have also been observed to be important when the participants tried to answer the question "Among the nine English accents you have heard, which one is the easiest to understand? Why?" For instance, some interviewees are introduced in the following:

Interviewee 3: "I think British English is the easiest to understand. Compared with the other English accents, this accent is more fluent and clear."

Interviewee 5: "It must be American English. Compared with the other English accents, American English is the clearest. Even though sometimes I couldn't catch some words because of liaison and fast speed, at least I could generally understand what the speaker was saying. "

The participants often attributed the loss of intelligibility to such speech properties as unclear pronunciation, strong accent, and unnatural intonation, as reflected in their answers to the question concerning the most difficult English accent. For example,

Interviewee 2: "I think that Indian English is the most difficult to understand. Apart from its heavy accent, the English intonation and stress pattern of this speaker are quite different from the English accents we have heard and used. These differences made me feel it is hard to understand."

Interviewee 6: "Japanese English is very difficult. The speaker

couldn't pronounce words very clearly and has a strange accent. I couldn't catch what she is talking about."

The aforementioned responses suggest that such specific speech properties as pronunciation, speed, intonation and fluency are important factors influencing the participants' judgments of English accents. The participants hold that proper speed, clear pronunciation, natural intonation and fluency may strengthen intelligibility, whereas fast speed, unclear pronunciation, unnatural intonation and poor fluency might lead to loss of intelligibility.

5 Discussion

5.1 Identification of English accents

The results of this study indicate that the Chinese participants had a poor performance in the recognition of English accents in general, with an average accuracy rate of 43.59%. According to the rates of accurate identification, the English accents can be ranked as follows: American English (100%) > British English (87.18%) > Australian English (74.36%), South Korea English (74.36%) >> Indian English (23.08%) > Singaporean English (17.95%) > Japanese English (15.38%). None of the participants have recognized Philippine English or French English correctly.

The above results are largely in line with our expectations: American English and British English, two typical native English accents, received the highest accuracy rates of identification, consistent with the previous studies (e.g., Ladegaard, 1998; Paunović, 2009). Although both British English and American English have been adopted as teaching models in EFL classrooms in China, American English, overtaking British English, has been regarded as the goal of English learning by Chinese students in recent years. Moreover, American recreation industry flourishes and American movies or TV series have received great popularity throughout the world. American English has become the Chinese students' most frequently encountered and used accent, which may explain why the participants recognized American English with a 100% accuracy rate.

What is more interesting is that the participants in this study were relatively good at recognizing South Korea English accent as it has the same accuracy rate as Australian English. Familiarity often facilitates accent identification (Derwing & Munro, 1997), which may explain why South Korea English is more identifiable. South Korean entertainment culture, including movies, TV series, actors and singers, is very popular among Chinese young people. In addition, many South Korean students are studying in the university where this research was undertaken. The close cultural and

educational interactions between China and South Korea may have helped
familiarize our students with South Korean English accent.

In contrast, the participants are less familiar with Philippine English,
French English, Indian English, Singaporean English and Japanese English
because they have little exposure or contact with these varieties, as reported
in the interview. Unfamiliarity or lack of exposure may be a major reason for
their failure in identifying these accents, in line with previous research (e.g.,
Smith, 1992; Smith & Bisazza, 1982).

5.2 Perceived comprehensibility and speech properties

The perceived comprehensibility of the nine English accents under
investigation can be ranked as follows:

American > British > Australian > Singaporean > Philippine > South
Korean > Japanese > Indian/French.

The results from t-test also indicate that the Inner Circle English
accents as a group are significantly more comprehensible than the Outer
Circle accents, which in turn are significantly more comprehensible than the
Expanding Circle accents for our students. The higher perceived
comprehensibility of the Inner Circle English accents, especially American
English, is in line with our expectations and findings of previous studies (e.g.,
Smith & Bisazza, 1982). A special case is Indian English, which is an Outer
Circle English variety but is perceived to be less comprehensible than South
Korean and Japanese English accents from the Expanding Circle. Indian
English will be discussed in more detail in the next section.

In terms of speech properties, the Inner Circle English accents,
especially American English and British English, are strongly associated with
clear pronunciation, proper speed, natural intonation and fluency. The
participants' perceived comprehensibility is significantly correlated with
pronunciation and intonation for almost all the English accents, except
Japanese English[6]. This result suggests that pronunciation and intonation,
rather than speed or fluency, are better indicators of speech properties for the
judgments of intelligibility, which is in line with Matsuua et al. (1999). The
case of Singaporean English in our study also testifies this point. Singaporean
English received the lowest rating in terms of speed and the interview with
the students showed that Singaporean English has a fast speed. However, the
rating of perceived comprehensibility of Singaporean English is relatively
high, ranking number four.

Interestingly, South Korean English, French English, Indian English

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[6] The current paper cannot explain why the students' perceived comprehensibility of
Japanese English is not significantly correlated with its pronunciation or intonation.

and Japanese English consistently had the lowest ratings in all the four speech properties as well as perceived comprehensibility. This result suggests that these four English accents are considered difficult to understand and their speech properties the poorest by the participants. A person's perception of an accent is rather complex and may involve a combination of many variables, including speaker factors like speech properties and listener factors like accent familiarity, language proficiency, and so on (Munro et al., 2006). The reasons for the participants' negative views concerning the above four English accents will be further explained in the next section.

5.3 Potential factors influencing intelligibility

Two potential factors affecting the participants' intelligibility judgments have been derived from the correlation and interview results, namely accent familiarity and speech properties such as fluency, speed, intonation and pronunciation.

The participants' familiarity with specific English accents apparently affected their subjective perceptions of comprehensibility, as familiarity could make them feel more confident in listening to those accents. This finding is consistent with the previous literature (e.g., Dayag, 2007; Gass & Varonis, 1984; Matsuura, 2007; Matsuura et al., 1999; Smith, 1992; Smith & Bisazza, 1982; Wilang & Teo, 2012). Although focusing on different English accents and targeting at different participants, all the aforementioned researchers have achieved a consensus that familiarity with or greater exposure to certain English accents appears to affect the intelligibility of those accents. It seems that the participants' exposure to or familiarity with certain English accents more or less has a positive phonological effect on them, resulting in more confidence and less inhibition when listening to those frequently exposed English accents. The participants of the present study are less familiar with Philippine English, French English, Indian English or Japanese English as mentioned in the interview. Unfamiliarity or lack of exposure may be a major reason for their failure in identifying, perceiving and understanding these accents.

Speech properties, such as pronunciation, intonation, speed and fluency, also play a very important role in intelligibility judgments. In terms of pronunciation, the participants claimed that a clear pronunciation might enhance their intelligibility. In the literature, pronunciation was also observed to be a potential factor, but most researchers examined it in a more specific manner (Deterding & Kirkpatrick, 2006; Jenkins, 2000; Suenobu et al, 1992; Tsuzuki & Nakamura, 2009). The researchers have agreed that segmental phonological features play a significant role in intelligibility, but they have also argued that different segmental features such as deviance from native vowels or consonants might have different roles in intelligibility judgments. The participants in the present study also mentioned the influence of

intonation on intelligibility. This finding is also consistent with the previous research (Munro & Derwing, 1995), where the importance of suprasegamental features like intonation and stress was emphasized. With regard to speed or speaking rate, the participants reported in the interview that fast speed might decrease their comprehension, in line with Zhang (2015). Speech properties may explain why our participants gave a relatively low rating of perceived comprehensibility to South Korean English despite their familiarity with this accent.

The ranking as outlined in section 5.2 shows that Indian English illustrated the lowest perceived comprehensibility although it belongs to the Outer Circle. Moreover, only 9 out of 39 participants successfully identified Indian English, with the accuracy rate being 23.08%. As has been reported in the interview, the participants were not familiar with Indian English accent. They also found speech properties of Indian English, especially pronunciation and intonation, quite difficult to understand, as they received low ratings (M<3) in the questionnaire. Low level of familiarity and poor speech properties may interplay and together explain the low ranking of Indian English in our study.

6 Conclusion

The present study investigated Chinese university students' identification and perceived comprehensibility of nine English accents and attempted to explore potential factors that may influence their perceptions by using questionnaires and semi-structured interviews. The following are the major findings.

First, Chinese university students have high accuracy rates in the identification of American English, British English, Australian English and South Korea English accents, while they have great difficulty recognizing Indian English, Singaporean English, Japanese English, Philippine English and French English accents, especially the last two.

Second, the Inner Circle accents, including American English, British English and Australian English are significantly more comprehensible than the Outer Circle accents (Indian English, Philippine English and Singaporean English) and the Expanding Circle accents (French English, Japanese English and South Korean English) for Chinese university students.

Third, perceived comprehensibility is significantly correlated with speech properties, such as pronunciation, speed, intonation and fluency for most of the English accents under investigation.

Fourth, two potential factors influencing intelligibility performance have been recognized, namely accent familiarity and speech properties. The two factors often interplay and work hand in hand in influencing people's understanding and judgement of English accents.

This study contributes to the ongoing literature on intelligibility and

provides some pedagogical implications for English education. The vigorous development of World Englishes calls for an adaptation to pluralism in English learning and adjustment of EFL teaching goals from overemphasis on native English phonology to achieving effective communication or "international intelligibility" (Jenkins, 2015). Moreover, English teachers can help familiarize their students with more English varieties to foster their awareness of World Englishes and enhance their inter-cultural communicative competence in authentic interactions.

The current study has a few limitations. First, the participants are all English majors, who account for only a small number of English learners in China. If non-English majors participate in such a study, the accuracy rates in identification and the ratings of perceived comprehensibility might be lower than this study, as they often have less exposure to different English accents than English majors. The second limitation is that this study investigates the students' intelligibility judgments, or perceived intelligibility of different accents. Investigating the actual understanding of different accents is the next step of our study. The third limitation is that structured and decontextualized speech samples have been used rather than authentic interaction data. Future studies can be carried out to investigate the intelligibility of English accents in authentic conversations. Finally, the participants' English proficiency has been controlled in this study. Further research can examine if participants' English proficiency level is a factor on their intelligibility judgments. These limitations suggest some directions for future studies.

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Appendix 1
Passage: Comma Gets a Cure

Well, here's a story for you: Sarah Perry was a veterinary nurse who had been working daily at an old zoo in a deserted district of the territory, so she was very happy to start a new job at a superb private practice in North Square near the Duke Street Tower. That area was much nearer for her and more to her liking. Even so, on her first morning, she felt stressed. She ate a bowl of porridge, checked herself in the mirror and washed her face in a hurry. Then she put on a plain yellow dress and a fleece jacket, picked up her kit and headed for work.

When she got there, there was a woman with a goose waiting for her. The woman gave Sarah an official letter from the vet. The letter implied that the animal could be suffering from a rare form of foot and mouth disease, which was surprising, because normally you would only expect to see it in a dog or a goat. Sarah was sentimental, so this made her feel sorry for the beautiful bird.

Before long, that itchy goose began to strut around the office like a lunatic, which made an unsanitary mess. The goose's owner, Mary Harrison, kept calling, "Comma, Comma," which Sarah thought was an odd choice for a name. Comma was strong and huge, so it would take some force to trap her, but Sarah had a different idea. First she tried gently stroking the goose's lower back with her palm, then singing a tune to her. Finally, she administered ether. Her efforts were not futile. In no time, the goose began to tire, so Sarah was able to hold onto Comma and give her a relaxing bath.

Once Sarah had managed to bathe the goose, she wiped her off with a cloth and laid her on her right side. Then Sarah confirmed the vet's diagnosis. Almost immediately, she remembered an effective treatment that required her to measure out a lot of medicine. Sarah warned that this course of treatment might be expensive—either five or six times the cost of penicillin. I can't imagine paying so much, but Mrs. Harrison—a millionaire lawyer—thought it was a fair price for a cure.

Appendix 2
Questionnaire on Perceived Comprehensibility

Instructions: We would like to invite you to fill in a questionnaire about how you look at different English accents. There is no right or wrong answer in this questionnaire, so please fill it up honestly. This questionnaire is for research only and the results will be kept confidentially. Thanks for your cooperation!

Yanyan Zhang

Part I   Background Information

Gender: _____   Age: _____   Major: _____

1. Years of English learning: _____

2. Hometown: _____

3. Experience of studying or living abroad:_____(Yes/No)

Part II   Judgment

1. Nationality of the speaker: _____

2. In the following are some statements about the recording. Please tick the number that can best represent your idea.

1. Completely Disagree	2. Disagree	3. Neutral	4. Agree	5. Completely Agree

(1) The speaker speaks English clearly.   1   2   3   4   5
(2) The speaker speaks at a proper speed.   1   2   3   4   5
(3) The speaker's intonation is natural and pleasant. 1   2   3   4   5
(4) The speech is fluent.   1   2   3   4   5
(5) I can easily understand the passage.   1   2   3   4   5

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