Implicit attitudes towards native and non-native speaker teachers

Abstract

The academic literature and educational principle suggest that native and
non-native English speaking teachers should be treated equally, yet in
many countries there is a broad social and commercial preference for
native speaker teachers which may also involve racial issues. Attitudes
towards native and non-native English speaking teachers have typically
been investigated through questionnaire surveys, but, since such attitudes
may involve prejudices, other research methods designed to elicit
implicit attitudes may be preferable. In this study, the Implicit
Association Test was used to investigate the implicit attitudes of Thai
students towards native and non-native English speaking teachers, and
results were compared with explicit attitudes elicited through a
questionnaire. The results indicate that attitudes towards native and non-
native teachers are complex with an explicit preference for native speaker
teachers, but no implicit preference and warmer explicit feelings towards

non-native speaker teachers. The reasons for and implications of these contrasting findings are discussed. 2

"Every man has reminiscences which he would not tell to everyone but only his friends. He has other matters in his mind which he would not reveal even to his friends, but only to himself, and that in secret. But there are other things which a man is afraid to tell even to himself, and every decent man has a number of such things stored away in his mind"

Fyodor Dostoyevsky, *Notes from the Underground*

This quotation implies that some aspects of cognition are essentially implicit (or outside the awareness of the person). One area of social psychology in which implicit modes of processing social information are particularly important is prejudice. As we attempt to conform to a socially acceptable lack of prejudice, any prejudices we may hold are kept implicit and thus may not be open to standard methods of investigation, such as questionnaire surveys. Instead, research methodologies specifically designed to investigate implicit constructs are needed (Brauer et al., 2000). Within language teaching, an area where prejudices, and thus implicit attitudes, may play a role is attitudes towards native and non-native speaker teachers. In this research, we examine explicit and implicit attitudes of Thais to native English speaking teachers (NESTs) and non-native English speaking teachers (non-NESTs).

1. Native and non-native English speaking teachers

Historically, there has been a preference for native speakers as teachers of a language[1]. For instance, two of the most influential books in TESOL (Harmer, 1991 and Stern, 1983) assume that native speakers provide the target model for language learning, and Phillipson (1992) argues persuasively, albeit disparagingly, that the tenet of the ideal teacher being a native speaker has been widely accepted and has had a wide-ranging impact on language education policies. Within recent academic literature, however, this native speaker model which assumes that non-NESTs are inferior to NESTs has come under fire (Nemtchinova, 2005).

There are three main arguments against the native speaker model. First, with the growth of English as an international language, the use of native speakers as the target for language learning becomes irrelevant with proficient non-native speakers a more attainable and relevant target (see Cook, 1999). Second, a realization of the strengths of non-NESTs and the weaknesses of NESTs has led to NESTs and non-NESTs being seen as simply different rather than one being superior to the other (e.g. Alptekin and Alptekin, 1984; Medgyes, 1994; Prodromou, 1992). Third, whatever the arguments for and against NESTs and non-NESTs, other issues related to professionalism, such as dedication and willingness to develop, are more important than native-speakerhood in determining effective teachers (Liang, 2002 cited in Braine, 2005; Watson Todd, 2006).

These arguments, especially the second point, have been supported by research into NESTs and non-NESTs. The majority of this research has consisted of surveys of teachers (e.g. Camiciottoli, 2004; Llurda and Huguet, 2003; Medgyes, 1994, 2001; Reves and Medgyes, 1994) and has highlighted the potential strengths of non-NESTs

while still acknowledging the challenges they face. The overall message in recent academic literature, then, is that neither NESTs nor non-NESTs are necessarily superior.

There is, however, a conflict between the educational principle of equality between NESTs and non-NESTs and commercial realities (Illés, 1991). Institutions offering English language programs often promote themselves as employing NESTs and advertisements for teaching positions often require that applicants are native speakers (Clark and Paran, 2007; Liu, 1999; McKay, 2002; Medgyes, 1994) implying that NESTs are preferable in some way. Why should educational institutions often prefer NESTs while educational principle indicates no such preference?

The reason for the commercial preference for NESTs appears to be that, despite the academic arguments and evidence, there is still a broad social acceptance of the native speaker model (Pacek, 2005; Thornbury, 2006). Clear evidence to support the existence of a general preference for NESTs is hard to find, but there are indications. Some evidence comes from surveys of students' preferences concerning teachers. While a combination of NESTs and non-NESTs is often the most preferred, where students have to choose between the two, they usually express a preference for NESTs (e.g. Lasagabaster and Sierra, 2002, 2005), and some students believe that being a native speaker is a criterion for effective teachers (Mullock, 2003). Similarly, a survey of non-NESTs in Hong Kong indicated a belief that NESTs are superior (Tang, 1997).

More anecdotal evidence can be found by examining letters to newspapers and contributions to Internet discussion boards on the topic. Looking at such evidence in Thailand, some quotations are surprisingly forthright in their preference for NESTs:

> "Native speakers are the best teachers of their own language."
>
> "Almost all parents would rather their children be taught English by a native English speaker."
>
> "Asian schools are providing their customers with what they want: native English speakers."
>
> "I wouldn't have my child learn English from a non-native speaker."
>
> "Filipinos teaching English rob children of a good education."

Some discussion board contributions raise the even more worrying issue of race:

> "In fact a lot of the ads [for hiring teachers] that ask for a native speaker really mean 'Asians need not apply'. If you look like a Westerner (i.e. you're white) you'll often be accepted as a native speaker even if you're German, Dutch etc."
>
> "Parents do care about the white face, even to the point of preferring a white non-native speaker to an Asian native speaker."

Such comments reinforce the concerns raised by Amin (1997) and Braine (2005) that some students automatically view non-white teachers as non-NESTs and see them as being less able than white NESTs, or even than any Caucasian. In such cases, attitudes towards NESTs and non-NESTs appear to be based on prejudice.

The overall picture concerning NESTs and non-NESTs suggests two conflicting perspectives. On the one hand, the academic literature and educational principle

indicates that NESTs and non-NESTs should be treated equally. On the other hand, some educational institutions show a clear preference for NESTs, a position which may be supported by broad social perceptions, at least in Thailand, and which may also involve racial issues. Given the importance of the NEST and non-NEST debate for teachers in terms of employment opportunities and remuneration and for students in terms of learning opportunities, clearer evidence concerning the broader social perceptions is needed. Previous attempts to provide such evidence have largely relied on questionnaire surveys, but a review of these surveys (Braine, 2005) concluded that responses could be "more politically correct than accurate" (p. 22). Similarly, research involving observations of NESTs and non-NESTs in the classroom (Árva and Medgyes, 2000) identified mismatches between stated attitudes and actual behaviour. These findings suggest that relying on reports of attitudes concerning NESTs and non-NESTs, a potential focus for prejudice, may be fraught with validity problems. In this paper, then, we collect evidence of broad social perceptions of NESTs and non-NESTs by using a test format derived from the field of social psychology which aims to elicit implicit attitudes. We also compare these implicit attitudes with stated attitudes elicited through a questionnaire.

2. Investigating prejudices

Given that research into a socially sensitive domain such as attitudes towards NESTs and non-NESTs is problematic, we need to identify alternatives to traditional self-report questionnaires, and one alternative is to measure implicit attitudes through the Implicit Association Test (IAT), an instrument widely used in the field of social psychology.

The IAT is "a measure of strengths of automatic associations" (Greenwald et al., 2003, p. 197) which examines performance speeds on classification tasks. Typically, four categories, comprising a pair of concepts and a pair of attributes, are used. For instance, as a test of racial prejudice, the two concepts could be *black* and *white* represented by faces of African and European origin, and the two attributes could be *positive* and *negative*, represented by sets of words with emotive associations. Presented on a computer, subjects are asked to classify items (faces or words) into their categories where a right-hand classification represents one of the concepts and one of the attributes (say, *black* and *positive*) and a left-hand classification represents the other concept and other attribute (in this case, *white* and *negative*). The procedure is then repeated with switches in the classification (so that *black* and *negative* share a response, as do *white* and *positive*). Response latencies, or reaction times, on the classification tasks are measured. It is assumed that faster responses are made when the two categories are more strongly associated. Thus, previous IAT research conducted in the US has shown faster responses when *white* is associated with *positive* and *black* with *negative* (e.g. Dasgupta et al., 2000) indicating a prejudice against African Americans. Several examples of fully usable IATs can be found at https://implicit.harvard.edu/implicit/.

The IAT has been used to investigate implicit attitudes towards a wide variety of topics, including age prejudices (e.g. Hummert et al., 2002), smoking (e.g. De Houwer et al., 2006), and self-esteem (e.g. Greenwald and Farnham, 2000). It has even been used to investigate customer attitudes (e.g. to high and low calorie foods in Maison et al., 2001). While there have been some criticisms of the validity and reliability of the

IAT, these have largely been answered through revisions to the procedures of administering the test and analysing the results (see Nosek et al., 2006).

A key issue with the IAT is whether it has predictive validity, in other words, whether IAT results accurately predict respondents' behaviour. Some previous IAT-based studies have addressed this issue by including an extra task involving either physiological responses or actual behaviour related to the concepts being measured (for example, Thush and Wiers (2007) included a measure of actual alcohol consumption in their research into attitudes towards alcohol). In a meta-analysis of 61 such studies, Poehlman et al. (2005) found conflicting evidence for predictive validity. In studies concerning consumer attitudes, explicit self-reports were a better predictor of actual behaviour than the IAT, and in many domains there are no differences between explicit and implicit measures. In the area of prejudices, however, the IAT is the better predictor of behaviour, and thus "the IAT is a valid method to assess the strength of evaluative associations in the domain of prejudice" (Gawronski, 2002, p. 171). Since we are viewing attitudes towards NESTs and non-NESTs as a potential prejudice, the IAT is a suitable instrument for this study.

3. Purposes of the study

In this study, we investigate the attitudes towards NESTs and non-NESTs of university students in Thailand, an EFL country where the vast majority of English teachers are non-NESTs but where many educational institutions employ at least one NEST. Explicit attitudes, divided into preferences and feelings, were elicited through a questionnaire and implicit attitudes through a version of the IAT. In addition, previous learning experience with NESTs was also elicited (it was assumed that all students had

had some experience with non-NESTs). Since we are investigating students' attitudes towards easily identifiable categories of teachers, issues of teacher competence and effectiveness are not considered.

The study therefore aims to answer the following research questions:

1. What are Thai university students' explicit attitudes towards NESTs and non-NESTs?

2. What are Thai university students' implicit attitudes towards NESTs and non-NESTs?

3. Is there a relationship between explicit and implicit attitudes towards NESTs and non-NESTs?

4. Is there a relationship between previous learning experience with NESTs and attitudes towards NESTs and non-NESTs?

4. Research methodology

4.1 The instrument

The instrument used to elicit attitudes towards NESTs and non-NESTs was a specially-designed computer program[2]. This program, using a *Moodle* platform, consists of two main parts preceded by an explanation of the purposes of the research and overall instructions: a questionnaire to elicit explicit attitudes, and an IAT to elicit implicit attitudes. All materials in the program are in Thai.

4.1.1 The questionnaire

The first part of the program consists of a short questionnaire. The first question asks whether respondents have had previous learning experience with NESTs. This is

followed by three 7-point Likert rating scale questions, one concerning comparative preferences for NESTs and non-NESTs, and one each for desire to be taught by NESTs and non-NESTs. These measures are similar to ones used in previous survey research into NESTs and non-NESTs (e.g. Lasagabaster and Sierra, 2002, 2005). Irrespective of any stated preferences, previous research (see Clark and Paran, 2007) has found that non-NESTs are more empathetic to students than NESTs, and so the questionnaire also includes two questions asking subjects to rate their feelings for NESTs and non-NESTs on a thermometer rating scale from warm (10) to cold (0) feelings.

4.1.2 The Implicit Association Test

To create the IAT, representative examples for a pair of concepts (NESTs and non-NESTs) and a pair of attributes (positive and negative teaching attributes) are needed. For the concepts, it was decided to use names rather than faces, since typical names of native speakers and non-native speakers (in this case, Thais) are clearly distinct. The names are preceded by the common Thai honorific for a teacher (*ajarn*) to ensure that respondents viewed the names as teachers. No names of teachers at the institution where the research was conducted were included, and a mix of male and female names was used. The names used in the IAT are given in Table 1.

INSERT TABLE 1 HERE

For positive and negative teaching attributes, a search of the literature concerning the characteristics of effective English language teachers (Cortazzi and Jin, 1996; Finocchiaro, 1989; Harmer, 1998; Mullock, 2003) was conducted to provide a

theoretical foundation for the choice of adjectives. The adjectives were also chosen on the basis that they could be expressed succinctly in Thai without using negative morphemes. The adjectives used in the IAT are given in Table 2. It should be noted that these are semi-literal translations of the Thai adjectives used and that translating adjectives is notoriously difficult given their context dependence (Voss et al., 1996).

INSERT TABLE 2 HERE

The IAT uses the names and adjectives in Tables 1 and 2 and was designed following standard IAT procedures intended to increase reliability and reduce the effects of extraneous variables (see Greenwald et al., 1998, 2003). The test thus involves seven stages or blocks, only two of which are included as data to analyse. The other stages are practice stages or stages to ensure that variables such as left and right keying do not affect results. Furthermore, based on the literature and quotations from newspapers and bulletin boards, it was predicted that NESTs would be more compatible with positive adjectives and more incompatible with negative adjectives. The seven blocks in the IAT are shown in Table 3.

INSERT TABLE 3 HERE

Speed of responses and error rates in blocks 4 and 7 were included as data for analysis. The IAT used in this study (in Thai) can be viewed at http://arts.kmutt.ac.th/crs/moodle/instruction.html.

4.2 Subjects

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Students at King Mongkut's University of Technology Thonburi, a respected Thai university, were asked to complete the questionnaire and IAT when using the Language Department computer laboratory. In total, 295 students used the program taking an average of 10 minutes each. Of these students, 7 did not complete every question in the questionnaire and so are not counted as subjects. In addition, subjects who took more than 10 000 milliseconds to answer any questions on the IAT (suggesting that they were not paying attention) were discounted together with those for whom over 10% of IAT questions were answered in less than 300 milliseconds (suggesting that they were pressing buttons without reading). After eliminating these students, there were 261 subjects.

4.3 Data analysis

From the questionnaire and IAT, ten categories of data (shown in Table 4) were used in the analysis. For data sources 2 to 10, means and standard deviations were calculated. T-tests were conducted for important pairs of data sets to see if apparent differences between means were real. Correlations between all data sources were also calculated (using point biserial correlation for correlations between data source 1 and other data sources, and product moment correlation for other correlations). The correlation coefficients from correlations between data source 1 and other correlations and between data sources 2 to 6 and 7 to 10 were taken as two-tailed since we have no clear predictions concerning the effects of experience or the relationship between implicit and explicit attitudes. Correlations within the groups of data sources 2 to 6 and 7 to 10 were interpreted as one-tailed.

INSERT TABLE 4 HERE

5. Findings

From the questionnaire 200 subjects (76.6%) had previously learnt with NESTs, with only 61 subjects (23.4%) having no such learning experience. The means and standard deviations for the other data sources are shown in Table 5.

INSERT TABLE 5 HERE

The means from questions 2 to 4 of the questionnaire (the three measures of preference) suggest that the subjects exhibit a slight explicit preference for NESTs over non-NESTs. However, also from the questionnaire, the subjects show moderately warmer feelings towards non-NESTs than NESTs, although they feel slightly warm towards all teachers. The IAT data with very similar response latencies and a neutral IAT interpretation, on the other hand, shows no real differences in implicit attitudes towards NESTs and non-NESTs.

To check whether these three tendencies are significant, t-tests were conducted for questions 3 and 4 of the questionnaire, for the two questions concerning feelings, and for the response latencies from Blocks 4 and 7 of the IAT[4]. Concerning preferences, the t-test shows that subjects expressed a significant preference for NESTs over non-NESTs (t = 7.636; p < 0.001), whereas for feelings, subjects felt significantly warmer towards non-NESTs than towards NESTs (t = 8.295; p < 0.001). For the IAT, the small difference in average response times between the block associating positive adjectives with NESTs and the block associating positive adjectives with non-NESTs was not significant (t = 1.113).

The correlations between all the various data sources are shown in Table 6. Some of these correlations are as expected. For instance, since the IAT interpretation is based on the IAT effect, we should expect a very high positive correlation. Similarly, the correlations between data source 2 and data sources 3 and 4 act as a reliability check for the questions about preferences on the questionnaire. Other correlations, however, provide more insight. Generally, since most of the correlations are not significant, it appears that experience of learning with NESTs has little effect on attitudes, both explicit and implicit, and that there are almost no clear relationships between explicit and implicit attitudes. The two main exceptions to these patterns are the significant correlations between feelings towards NESTs and experience, and between feelings towards non-NESTs and implicit attitudes favouring non-NESTs. For the first of these exceptions, the significant correlation implies that students who have had experience with NESTs feel warmer towards such teachers. The second exception suggests that warmer feelings and positive implicit attitudes are slightly related, at least for non-NESTs.

Four other points are also worth highlighting. First, the lack of a negative correlation between preference for NESTs and preference for non-NESTs suggests that subjects may be interpreting the questions as asking about likes, rather than preferences. Second, the significant correlations between preferences and feelings of warmth suggest that these two aspects of attitudes are related, despite the seemingly contradictory findings based on the mean ratings. Third, the positive correlation between warm feelings for NESTs and for non-NESTs implies that a general feeling towards all teachers is more important than specific feelings towards either NESTs or

non-NESTs. Finally, the strong positive correlation between response times in Blocks 4 and 7 suggests that absolute latencies (in other words, reaction times in a single data set) depend more on the reaction speeds of individual subjects than on preferences, although this finding does not affect interpretations of the IAT effect which depends on relative latencies (comparative reaction times across two data sets).

From the correlations, it appears that explicit and implicit attitudes are not related, as was also suggested by the preference for NESTs in the questionnaire compared to the lack of preference on the IAT. Since question 2 of the questionnaire (comparing preferences for NESTs and non-NESTs) and the IAT interpretation involve directly comparable scales, a t-test can be used to examine whether the two sets of results are different. It was found that the explicit preferences for NESTs and non-NESTs were significantly different from the implicit IAT interpretations ($t = 4.063$; $p < 0.001$), confirming that explicit and implicit attitudes are not related.

To summarise the key findings, for explicit attitudes, subjects prefer NESTs to non-NESTs, but feel warmer towards non-NESTs. They show no difference in their implicit attitudes between NESTs and non-NESTs, however. Generally, neither explicit nor implicit attitudes are affected by whether subjects had had previous learning experiences with NESTs, and explicit attitudes are not related to implicit attitudes.

INSERT TABLE 6 HERE

6. Discussion

A key finding in this study confirms results in previous survey research into students' attitudes towards NESTs and non-NESTs (Lasagabaster and Sierra, 2002, 2005), namely, when asked to explicitly state a preference, students express a preference for NESTs. However, explicitly stated preferences do not provide the whole picture of students' attitudes. In the current study, although students explicitly prefer NESTs, unconsciously they exhibit no real preference and they actually feel warmer towards non-NESTs. Future research into students' attitudes towards NESTs and non-NESTs, therefore, even if it only investigates explicit attitudes, needs to examine more than stated preferences to provide a balanced perspective. The more complex picture of attitudes towards NESTs and non-NESTs found in this study also implies that an explicit student statement of preference for NESTs does not necessarily mean that non-NESTs should not be employed.

A further finding in this study stands in contrast to the results from the surveys of Lasagabaster and Sierra (2002, 2005). In the current study, previous experience of studying with NESTs appears to have almost no effect on students' attitudes with the exception of feelings of warmth towards NESTs, whereas Lasagabaster and Sierra found that experience of learning with NESTs led to more positive attitudes towards NESTs in several situations. A possible reason for the discrepancy in the two sets of results may be found by looking at Lasagabaster and Sierra (2005), who, in addition to asking about experience and preferences, asked students about what they perceived as the strengths and weaknesses of NESTs and non-NESTs from their experience. The biggest strength of NESTs was identified as teaching pronunciation, the area for which students also expressed the strongest preference for NESTs, whereas non-NESTs were perceived to be strong in learning strategies. In the present study, we only considered

general preferences, and, even though Lasagabaster and Sierra also found a relationship between experience and general preferences, the perceived strengths of NESTs gained from experience may not be enough to influence overall preferences. A second potential explanation for the discrepancy is that, in this study, we only asked whether students had had previous experience with NESTs and not whether this experience was positive or negative. It seems possible that the effects of experience on preferences may depend on whether the experience was positive or negative, a point for which further research is necessary.

When compared to previous research into prejudice using IATs, the current study is an unusual case. Most previous IAT research into prejudice has found that explicit attitudes are more neutral than implicit attitudes. For instance, Dovidio et al. (1997) found that implicit racial attitudes were more negative than explicit measures of prejudice. The most frequent explanation for such differences is that, whatever subjects' unconscious attitudes are, they will attempt to make any explicit statements of attitudes reasonably socially acceptable. In our research into NESTs and non-NESTs, however, students apparently are willing to explicitly express a more prejudiced attitude than the one they implicitly hold. The nature of the categories being compared may provide an explanation for this difference. The literature on racial prejudice usually compares a category matching the subjects (typically, white university students) with a category (usually black) that they are expected to be biased against. The current study, however, compared a category matching the subjects (Thais or non-native English speakers) with a category (NESTs) that previous literature had shown to be likely to be preferred. If we take such expectations as starting points, we find that for racial prejudice research, implicit attitudes reported are

generally more negative towards the category not matching the subjects than might be expected, while explicit attitudes, while often still somewhat negative, are more positive. For attitudes towards NESTs and non-NESTs, if the starting point is a slight preference for NESTs, the implicit attitudes are slightly more negative towards the category not matching the subjects and the explicit preferences are more positive. Although this interpretation does not account for the findings about feelings, the discrepancy in implicit attitudes and explicit preferences between racial prejudice research and this study may be more apparent than real. It is unclear, however, whether such an interpretation based on starting points, which shows that this research into NESTs and non-NESTs follows the same pattern as the racial prejudice research, is valid, or whether the current study really stands in contrast to the research into racial prejudices.

Whatever the case, a key finding from previous IAT research has important implications. In prejudice research, implicit attitudes are a good predictor of behaviour. For instance, McConnell and Leibold (2001) found that negative implicit attitudes towards blacks correlated with negative social interactions with blacks. In the current study, the IAT effect showed no preference for NESTs (or non-NESTs), and, if implicit attitudes predict behaviour, this should mean that students do not behave differently with NESTs and non-NESTs. Any problems of prejudice against non-NESTs are issues of explicit preferences, which may be easier to change than implicit attitudes. Historically, socially acceptable explicit attitudes to race in the West have changed substantially over the last fifty years, and it should be possible, albeit over a long period of time, to change social attitudes in Thailand and similar countries so that explicit statements of preference for white NESTs or even any NESTs become socially

unacceptable. Doing this would give NESTs and non-NESTs even opportunities and would allow all teachers to be judged as individuals rather than as representatives of potentially prejudicial categories.

Notes

[1] The distinction between NESTs and non-NESTs is not necessarily a clear-cut dichotomy, since there are several potential bases for categorizing people as native speakers and non-native speakers (Andrews, 2007; Consolo, 2000; Liu, 1999; McKay, 2002). In investigating prejudices towards NESTs and non-NESTs, however, we are likely to be focusing on prototypical cases – for NESTs, probably British or American white Anglo-Saxons; for non-NESTs in Thailand, probably Thais whose English skills have been developed primarily through formal education.

[2] We would like to thank Meechai Junpho for his help with programming.

[3] Following standard practice with data from IATs (see Greenwald, McGhee and Schwartz, 1998), before analysing the response latency data, latencies less than 300 milliseconds were recoded as 300 and latencies more than 3000 milliseconds were recoded as 3000 milliseconds.

[4] Before conducting t-tests, the normality of distribution of the data was checked using the Kolmogorov-Smirnov test. All data sets were found to be sufficiently normal.

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Table 1   Names of NESTs and non-NESTs used in the IAT

NESTs	Ajarn Michael, Ajarn William, Ajarn David, Ajarn Nicholas, Ajarn Sophia, Ajarn Elizabeth, Ajarn Julia
Non-NESTs	Ajarn Tanapon, Ajarn Teeradech, Ajarn Chokchai, Ajarn Nipaporn, Ajarn Sunisa, Ajarn Wipawan, Ajarn Sureerat

Table 2   Positive and negative adjectives used in the IAT

Positive	active, creative, enjoyable, flexible, open-minded
Negative	passive, derivative, cheerless, rule-bound, dogmatic

Table 3   Sequence of blocks in the IAT

Block	No. of trials	Function	Items assigned to left-key response	Items assigned to right-key response
1	20	Practice	NEST names	Non-NEST names
2	20	Practice	Positive adjectives	Negative adjectives
3	20	Practice	NEST names + positive adjectives	Non-NEST names + negative adjectives
4	40	Test	NEST names + positive adjectives	Non-NEST names + negative adjectives
5	20	Practice	Non-NEST names	NEST names
6	20	Practice	Non-NEST names + positive adjectives	NEST names + negative adjectives
7	40	Test	Non-NEST names + positive adjectives	NEST names + negative adjectives

Table 4   Categories of data

Category of data	*Data source*	*Data format*	*Purpose*
Explicit attitudes			
1. Experience with NESTs	Question 1 of the questionnaire	Yes/No question	To elicit previous experience with NESTs
2. Preference for NESTs/non-NESTs	Question 2 of the questionnaire	7-point rating scale where 1 = greatly prefer non-NESTs and 7 = greatly prefer NESTs	To directly compare explicit attitudes towards NESTs and non-NESTs
3. Preference for NESTs	Question 3 of the questionnaire	7-point rating scale for agreement with the statement 'I want to learn English with a native speaker teacher more than with a Thai teacher' where 1 = strongly disagree and 7 = strongly agree	To elicit explicit attitudes towards NESTs
4. Preference for non-NESTs	Question 4 of the questionnaire	7-point rating scale for agreement with the statement 'I want to learn English with a Thai teacher more than with a native speaker teacher' where 1 = strongly disagree and 7 = strongly agree	To elicit explicit attitudes towards non-NESTs
5. Feelings towards NESTs	Question 5 of the questionnaire	Thermometer rating scale of feelings towards NESTs where 0 = very cold and 10 = very warm feelings	To elicit explicit feelings towards NESTs
6. Feelings towards non-NESTs	Question 6 of the questionnaire	Thermometer rating scale of feelings towards non-NESTs where 0 = very cold and 10 = very warm feelings	To elicit explicit feelings towards non-NESTs
Implicit attitudes			
7. Implicit attitudes 1	Response latencies from Block 4 of the IAT	Response times in milliseconds	To elicit implicit attitudes with quicker responses suggesting an implicit preference for NESTs[3]
8. Implicit attitudes 2	Response latencies from Block 7 of the IAT	Response times in milliseconds	To elicit implicit attitudes with quicker responses suggesting an implicit preference for non-NESTs[3]

9. IAT effect	Mean response latency in Block 7 minus mean response latency in Block 4	Difference in response times in milliseconds	To compare implicit attitudes with positive figures for the IAT effect showing a preference for NESTs, and negative figures showing a preference for non-NESTs
10. IAT interpretation	IAT effect divided by average response time	7-point scale where 1 = strongly prefer non-NESTs and 7 = strongly prefer NESTs	To compare implicit attitudes on a 7-point scale

Table 5   Means for data sources

Data source	Mean	Standard deviation
Explicit attitudes		
Preference for NESTs/non-NESTs	4.69	1.53
Preference for NESTs	5.27	1.08
Preference for non-NESTs	4.50	1.16
Feelings towards NESTs	6.04	1.93
Feelings towards non-NESTs	7.31	1.94
Implicit attitudes		
Implicit attitudes 1	1095.89	201.04
Implicit attitudes 2	1108.69	203.63
IAT effect	12.80	185.79
IAT interpretation	4.13	1.52

Table 6   Correlations between data sources

Data source	1	2	3	4	5	6	7	8	9
1. Experience with NESTs	1								
2. Preference for NESTs/non-NESTs	.123*	1							
3. Preference for NESTs	.013	.539****	1						
4. Preference for non-NESTs	.036	-.328****	-.057	1					
5. Feelings towards NESTs	.199***	.296****	.281****	-.062	1				
6. Feelings towards non-NESTs	.018	-.112*	.016	.168**	.183**	1			
7. Implicit attitudes 1	.058	.026	-.047	-.101	.029	-.051	1		
8. Implicit attitudes 2	-.010	.006	.008	-.029	.034	-.126*	.579****	1	
9. IAT effect	-.073	-.021	.059	.077	.006	-.083	-.448****	.470****	1
10. IAT interpretation	-.103	-.064	-.007	.075	-.053	-.086	-.318****	.399****	.782****

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

**** $p < 0.0001$