The effects of Indian-accented English and need for cognition on message evaluation: A field study

Duoc V. Nguyen

University of Northern Iowa

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THE EFFECTS OF INDIAN-ACCENTED ENGLISH AND NEED FOR COGNITION ON MESSAGE EVALUATION: A FIELD STUDY

An Abstract of a Thesis

Submitted

in Partial Fulfillment

of the Requirements for the Degree

Master of Arts

Duoc V. Nguyen

University of Northern Iowa

December 2009
ABSTRACT

Research has shown that Americans rate non-accented English speakers more favorably than accented English speakers (e.g., Cargile & Giles, 1997; Frumkin, 2007); however this is not always the case (e.g., Cargile, 2000; Singer & Eder, 1988). Other factors may be involved when people are processing other people’s messages. One motivating factor may be the extent to which people like to think, or have a high need for cognition (NCS; Cacioppo & Petty, 1982). As call center jobs continue to be outsourced to other countries such as India, it is important to ascertain how people with varying degrees of motivation to think evaluate people with Indian-accented English. This study examined whether evaluations of this accent may be moderated by individual differences in NCS (Cacioppo & Petty, 1982) and argument strength, using the elaboration likelihood model (Petty & Cacioppo, 1986). It was hypothesized that people with low NCS would use the Indian-accent as a negative peripheral cue and evaluate an Indian-accented sales pitch more negatively than a Midwestern-accented one, regardless of argument strength, and that people with high NCS would evaluate a sales pitch with strong arguments more positively than one with weak arguments, regardless of accent. Community members listened to 1 of 16 different sales pitches recorded by 2 male and 2 female Midwestern Americans and 2 male and 2 female natives of India and reported their evaluations. People with low NCS were affected by accent type as expected, giving more negative evaluations of sales pitches read by people with Indian accents. They also evaluated pitches with weak arguments more negatively than those with strong arguments. On the other hand, people with high NCS did not differentiate their evaluations by accent type or
argument strength. Message evaluation was more strongly related to intentions to buy solar panels than were attitudes toward solar panels. These results suggest that the recent trends of outsourcing call centers to foreign countries may have a negative effect on consumers' purchase decisions.
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Has been approved as meeting the thesis requirement for the Degree of Masters of Arts

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CHAPTER 1
INTRODUCTION

Accented English is ubiquitous in the United States. The United States of America is home to over 29 million foreign born immigrants, of whom 17.5 million are legal and 11.5 million are illegal (Hoefer, Rytina, & Campbell, 2007). Regardless of their legal status, many of these immigrants who resettle in the United States attempt to assimilate into their new culture by learning English as their second language in order to make a living in the United States. In the 2006 to 2007 academic year, over half a million international students came to the United States to further their academic careers. The net contribution from international students to the U.S. economy from tuition and fees and living expenses is over $14 billion (Institution of International Education, n.d.). These students may retain an accent if English was not their primary language or if the English they learned was accented. Another group people who may have accented English are foreign workers hired by American companies. As the number of jobs outsourced continue to rise, Americans will continue to rely on assistance from English-speaking employees from other countries. For example, Dell customers have to rely upon Indian English-speaking employees for their customer assistance (Spooner, 2005). Accented English is present in the immigrants who travel from afar to seek opportunities in the United States, international students who come here to study, and in the people Americans interact with due to increased job outsourcing to foreign countries.

Unfortunately, past research has shown that non-accented English speakers are often rated more favorably than accented English speakers (Cargile & Giles, 1997;
Frumkin, 2007), although not everyone shows this bias. One motivating factor affecting evaluations of accented English may be individual differences in need for cognition (Cacioppo & Petty, 1982). Need for cognition is the tendency of a person to enjoy thinking. The proposed study uses the elaboration likelihood model (Petty & Cacioppo, 1986) to examine how individual differences in need for cognition affect how community members of two Midwestern cities evaluate a Midwestern- or Indian-accented sales pitch advocating the use of solar panels. Previous studies on accents have shown that it may be hard to lose an accent after a certain age and that attitudes toward people with accented speakers of English are mixed.

**Accents**

**Accent Retention**

The age at which a person begins learning a second language affects accent retention. For example, one study found that 68% of Cuban children who began learning English between the ages of 1 and 6 did not retain a Cuban accent and 32% retained a slight accent. Of those children who started learning English between the ages of 7 and 12, 59% retained a slight or definite accent. For those who learned English between the ages of 13 and 19, 93% retained a slight or definite accent (Asher & García, 1969).

Accented English may be an even more likely outcome for native speakers of languages other than Spanish. Native Chinese speakers who learn English around 7-1/2 years-old tend to retain an accent (Flege & Fletcher, 1992). Over two-thirds of Chinese children who start learning English between the ages of 7 and 12 retain a slight accent (Tahta, Wood, & Lowenthal, 1981).
Foreign accents can sometimes be extinguished or mitigated if English is learned at a young age; however, not everyone learns English at an early age. Immigrants who travel to the United States may know very little or no English at all when they arrive. Foreign students who want to broaden their horizons and opportunities in America may learn English as a second language at a later age, and citizens of other countries may learn English as adults in order attain better jobs in the global economy. Regardless of their motive, people who learn English at the age of 13 or greater are likely to retain a discernible accent (Asher & García, 1969).

Attitudes towards Accented Speakers

Although individuals may use the same words to convey their thoughts, accents may sometimes influence others’ thoughts towards them. In the United States, studies on the effect of accents on eyewitness testimony between non-accented English speakers and accented speakers show that non-accented English speakers are evaluated more favorably. For example, a study on the influence of accent on perceptions of eyewitness testimony between non-accented, German-accented, Lebanese-accented, and Spanish-accented English speakers revealed that mock jurors preferred the non-accented testimony. Participants perceived the non-accented witness to be significantly more credible and accurate, to be less deceptive, and to have more prestige than the accented witnesses (Frumkin, 2007). Similarly, Hosoda, Stone-Romero, and Walter (2007) found that Americans students preferred non-accented over Vietnamese-accented speakers of English. Students reported that it was more difficult to comprehend the Vietnamese-accented as opposed to a non-accented speaker of English.
Accents affect people’s perceived pleasure as well. Cargile and Giles (1997) examined perceived pleasure while listening to a non-accented English speaker or one of three different fluency levels of Japanese accents (slightly accented, heavily accented, and heavily accented spoken in non-standard English) for two different types of speeches (non-aggressive speech and aggressive speech, one that verbally attacked the participants’ in-group). American participants reported feeling more pleasure when listening to the American accented English speaker than any variant of the Japanese-accented English, regardless of speech type.

Accents also affect how people perceive sales people. For example, students listened to either an American-accented or a Greek-accented sales pitch for a VCR in a study on the affects of accents (Tsalikis, DeShields, & LaTour, 1991). Students rated the standard American-accented person more favorably than a Greek-accented salesperson on multiple dimensions including honesty, convincingness, and how willing they were to buy the product from the person.

In other countries, attitudes towards accents also mostly favor the natives. For instance, Australian men evaluate men with British English accents less favorably than men with Australian English accents (Callan, Gallois, & Forbes, 1983). Similarly, Tsalikis, Ortiz-Buonafina, and LaTour (1992) showed that Guatemalans preferred sales pitches given by a person with a Guatemalan-accent as opposed to a person with a Spanish-accent. In Canada, Kalin and Rayko (1978) found that Canadian students who acted as personnel consultants favored candidates with a Canadian-accent to a foreign-accent for high status jobs (e.g., foreman and industrial mechanic). However, consultants
favored foreign-accented as opposed to Canadian-accented applicants for low status jobs (e.g., production assembler and plant cleaner). It could be that student consultants associated people with accents as hard workers with limited English who would be successful in low skill labor jobs such as plant cleaner, thus the preference for accented job applicants in the lower status job.

However, at least one study showed that the native accent is not always favored. Singaporeans are more affected by advertisements read in a British English accent than in a Singaporean English accent (Lalwai, Lwin, & Li, 2005). In this case, it could be that a British-accented speaker may be viewed as more refined or eloquent, lending that person more credibility as a salesperson. Singaporean students may have viewed British-accented English as having a higher status than Singaporean-accented English.

Some studies have shown that accented-English is not a factor in settings such as employment selection (Cargile, 2000; Singer & Eder, 1988). For example, students in New Zealand watched a videotape of a job applicant interviewing with a New Zealand-accented, Dutch-accented, Maori-accented, or Chinese-accent English and rated their attitudes towards the job applicant. Students reported similar attitudes towards candidates regardless of accent (Singer & Eder, 1988). Similarly, another study on employment selection by Cargile (2000) showed that American students also reported similar attitudes towards job applicants, regardless of whether the job applicant had an American-accent or a Chinese-accent. Similar attitudes between the indigenous- and foreign-accented English speakers could be due to a positive connotation associated with that minority
group. For example, Chinese-accented applicants may be viewed as suitable for high 
status jobs such as information systems trainee by American students.

These studies suggest that people often judge a person with an accent that is not 
indigenous to their country more negatively; however, this is not always the case. Other 
factors may be involved when people are processing other people’s messages. One 
motivating factor may be how much a person likes to think. People who like to think may 
be more affected by the content of a message than the type of accent a person has, 
wheras people who do not like to or unable to think about the content of the message 
may be more affected the type of accent a person has than the content of the message. In 
this study, the elaboration likelihood model (Petty & Cacioppo, 1986) was used to 
explore how evaluation towards people with non-accented or accented English may be 
different depending on people’s motivation to process information.

Elaboration Likelihood Model

The elaboration likelihood model proposes that there are two routes to persuasion 
(Petty & Cacioppo, 1986). The theory states that the likelihood that people will think 
about, or elaborate, on a message will affect the type of persuasion route they take. The 
central route to persuasion occurs when people are motivated and able to think about an 
issue, such as when it is personally relevant to them. People make a decision from 
thinking carefully about and examining relevant information given to them. On the other 
hand, the peripheral route to persuasion occurs when people are not motivated or able to 
think, such as when it is an issue they do not care much about. When this occurs, people 
make their decision based on positive or negative “cues.” When the central route to
persuasion is invoked, argument quality affects persuasion, whereas for the peripheral route, peripheral cues such as expertise or attractiveness of the source affect persuasion.  

Central Route and Argument Quality

The central route to persuasion is taken when people engage a high level of cognitive activity whereby they combine their prior knowledge and experiences to examine relevant information based on its merit (Petty, 1994; Petty & Cacioppo, 1986). People are exposed to many persuasive messages everyday; however, not every message they are exposed to will undergo careful elaboration. Two conditions are necessary for this process to occur; the person receiving the message must be motivated and able to think about the issue at hand (Petty & Cacioppo, 1986). People are motivated when they are personally involved in a subject that may affect them (Petty, Cacioppo, & Goldman, 1981). Once people are motivated, whether they are able to think about the subject at hand depends on their level of need for cognition (Cacioppo, Petty, Feinstein, & Jarvis, 1996; Preister & Petty, 1995).

Argument quality plays an important role in the elaboration likelihood model. It refers to the perception that a message is strong and believable vs. weak and fallacious. A strong message is one that elicits favorable thoughts by the participant. On the other hand, a weak message is one that elicits unfavorable thoughts. When there is high personal relevance or involvement, people tend to take the central route to persuasion and argument quality affects the level of persuasion. However, when there is low personal relevance or involvement, people tend take the peripheral route to persuasion and argument quality does not affect the level of persuasion. For instance, a study examining
whether comprehensive exams should be implemented for college seniors revealed that students who were told that comprehensive exams were going to be implemented the following year (high involvement) differentiated argument strength by being more persuaded by strong arguments than weak arguments. Students who were told that comprehensive exams would be implemented 10 years later (low involvement) did not differentiate between the levels of argument quality and were equally persuaded by strong and weak arguments (Petty & Cacioppo, 1981). Similarly, when students were led to believe that the message advocating the implementation of senior comprehensive exams was for their university (high relevance), students differentiated the argument quality by being more persuaded by strong than weak arguments. However, when they were led to believe that the advocating of implementation of senior comprehensive exams was for a distant university (low relevance), students were again equally persuaded by strong and weak arguments (Petty & Cacioppo, 1979b).

Peripheral Route and Peripheral Cues

The peripheral route to persuasion is taken when people are not fully engaged in carefully and effortful thinking about the relevant information presented. People lack the ability to process all the persuasive messages presented to them, but attitude change can still occur. In the peripheral route to persuasion, peripheral cues are relied upon to guide people's attitudes. For instance, some of these cues could be expertise level (Petty, Cacioppo, & Goldman, 1981) or credibility of the source (Petty & Cacioppo, 1984).

Peripheral cues refer to cues that affect attitudes in the absence of motivation or ability to think. When people take the central route to persuasion, peripheral cues do not
affect the level of persuasion. However, when people take the peripheral route to persuasion, peripheral cues can affect the level of persuasion positively or negatively. Petty, Cacioppo, and Goldman (1981) showed that when personal relevance was low, a peripheral cue such as level of expertise affected persuasion. However, when personal relevance was high, expertise level did not affect persuasion. Similarly, when personal relevance is low, the number of arguments affects the level of persuasion; however, when personal relevance is high, the number of arguments does not affect the level of persuasion (Petty & Cacioppo, 1984). In these instances, a high level of expertise and more arguments were peripheral cues, increasing persuasion when elaboration likelihood was low, but having little effect when elaboration likelihood was high and people had the motivation and ability to process the messages.

Another factor that affects persuasion is rhetorical questions. When there is low personal involvement, people were more persuaded by rhetorical questions as opposed to regular statements advocating comprehensive exams. However, when involvement is high, people are distracted by rhetorical questions (Petty, Cacioppo, & Heesacker, 1981)

Need for Cognition

Another variable that can impact persuasion is need for cognition. Need for cognition is the extent to which people enjoy thinking (Cacioppo & Petty, 1982). People with higher needs for cognition prefer complex over simple tasks, whereas people with low need for cognition tend to prefer the simple task over the complex task (Cacioppo & Petty, 1982). People high in need for cognition tend to search for more information (Yang & Lee, 1998) and take longer to process the information (Levin, Huneke, & Jasper, 2000)
than people low in need for cognition. People high in need for cognition are more likely
to take the central route to persuasion, whereas those low in need for cognition are more
likely to take the peripheral route to persuasion (Cacioppo et al., 1996; Preister & Petty,
1995).

People in high need for cognition are more persuaded by argument quality
(Cacioppo, Petty, & Morris, 1983; Haugtvedt, Petty, & Cacioppo., 1992; Preister & Petty,
1995). Those low in need for cognition are more persuaded by peripheral cues such as
attractiveness (Haugtvedt et al., 1992) and credibility of the source (Preister & Petty,
1995). In advertising, people high need in for cognition tend to not be as influenced by
positively or negatively framed advertisements; however, people low in need for
cognition are more influenced by positive message framing (Smith & Levin, 1996; Zhang
& Buda, 1999). People high in need for cognition are affected by argument strength in
ads for banks (Batra & Stayman, 1990) and typewriters (Haugtvedt et al., 1992), whereas
people low in need for cognition are not.

These studies indicate that need for cognition plays a crucial role in attitude
formation. People with high need for cognition tended to be influenced by argument
quality, whereas people with low need for cognition tended to be influenced by peripheral
cues. Following the elaboration likelihood model (Petty & Cacioppo, 1986), this study
examined how people with high or low need for cognition evaluated a sales pitch with
either strong or weak arguments advocating solar panels with either an Indian- or
Midwestern-accent.
Current Study

With the proliferation in the numbers of jobs being outsourced to India (Spooner, 2005), it is important to ascertain the attitudes that Americans have towards Indian-accented English speakers. In the United Kingdom, attitudes towards Indian people were found to be more negative than those other ethnic minorities (Watt, Maio, Rees, & Hewstone, 2006). However, in the United States, attitudes towards Indian people are unclear. Even though there has been little research examining the effects of Indian-accented English, it is expected that the Indian-accent will serve as a negative peripheral cue. The current study examined how individual differences in need for cognition affect the evaluation of a sales pitch. Previous persuasion studies have primarily used attitudes as the main dependent variable. However, a study by Cacioppo et al. (1983) indicated that message evaluation was a more sensitive measure than attitude index when it came to detecting the interaction between argument quality and need for cognition. In light of this, message evaluation was used as the primary dependent variable and attitude index was used as a supplementary dependent variable.

Previous studies have used counterattitudinal arguments advocating senior comprehensive exams (Petty, Cacioppo, & Goldman, 1981; Petty, Harkins, & Williams, 1980) or raising tuition (Cacioppo et al., 1983), but these arguments would not be relevant for a community sample. More recently, a survey assessing Iowans’ attitudes toward energy conservation revealed that 99% of respondents did not use solar panels to produce energy for their homes (Losch & Nguyen, 2007). When asked why respondents did not use solar panels, 41% reported they have not thought about it or it was not a habit
and 59% reported they preferred not to. Because these data show that energy conservation tactics such as installing solar panels to produce energy for the household are indeed counterattitudinal, this study created and used strong and weak messages advocating the use of solar panels. In this study, participants listened to a non-accented or Indian-accented English speaker advocating the use of solar panels using strong or weak arguments. In light of previous research on need for cognition and argument quality on the elaboration likelihood model (e.g., Batra & Strayman, 1990; Haugtvedt et al., 1992), it was expected that:

1. Participants high in need for cognition would evaluate the sales pitch with strong arguments more positively than the one with weak arguments, regardless of accent.

2. Participants low in need for cognition would use the Indian-accent as a negative peripheral cue and evaluate the Indian-accented sales pitch less favorably than the non-accented, regardless of argument strength.
CHAPTER 2

METHOD

Pilot Study and Material Creation

Petty and Cacioppo (1986) suggested that in order to create good strong and weak messages, it is imperative that one pilot a collection of perceived strong and weak messages. In this pilot study, 23 students from a midwestern university rated 35 arguments advocating the use of solar panels on a scale of 1 (very weak) to 9 (very strong). Means and standard deviations were calculated for all arguments. Arguments with the highest and lowest means with relatively low standard deviations were used to create a script for two sales pitches (see Table 1). Each script consisted of seven of the strongest or weakest arguments. Three male and three female UNI students with Indian-accented English and three male and three female UNI students with Midwestern-accents recorded two sales pitches, one with strong arguments and one with weak arguments. Rate of speech was kept similar in all recordings to mitigate its effects on the message evaluation (Smith & Shaffer, 1991; 1995). All recordings from each student were completed within a few seconds of each other. The UNI student actors took 36-44 seconds to complete the weak argument sales pitch (160-186 words per minute) and 42-48 seconds to complete strong argument sales pitch (152-174 words per minute).
Table 1

*Means and Standard Deviations of Arguments.*

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>SD</th>
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<tbody>
<tr>
<td>1. Nowadays it is stylish to decorate your roof with a solar panel.</td>
<td>2.38</td>
<td>1.97</td>
</tr>
<tr>
<td>2. Celebrities such as Brad Pitt and Angelina Jolie have endorsed the use of solar panels.</td>
<td>2.92</td>
<td>2.15</td>
</tr>
<tr>
<td>3. One in ten Americans would consider using solar panels.</td>
<td>3.79</td>
<td>2.41</td>
</tr>
<tr>
<td>4. Once you install solar panels on the roof top of your home, all you have to do is sit back and let the solar panels do all the work.</td>
<td>4.33</td>
<td>1.90</td>
</tr>
<tr>
<td>5. Europe and other powerful countries are switching to solar panels and so should the U.S.</td>
<td>4.54</td>
<td>2.30</td>
</tr>
<tr>
<td>6. Solar energy is a source of energy that is widely untapped, Americans should highly consider this option before everyone jumps on the bandwagon.</td>
<td>4.54</td>
<td>2.57</td>
</tr>
<tr>
<td>7. Everyday Americans, slowly but surely, are switching to solar panels to produce clean renewable electricity.</td>
<td>4.58</td>
<td>2.12</td>
</tr>
<tr>
<td>8. Solar panels are an effective way of generating energy; if they weren't they would have gone off the market by now.</td>
<td>4.67</td>
<td>2.55</td>
</tr>
<tr>
<td>9. Every minute, enough energy arrives at the Earth from the sun; if only American could harness its energy properly, we could be a carbon neutral nation.</td>
<td>4.92</td>
<td>1.91</td>
</tr>
</tbody>
</table>

(Table Continues)
10. During blackouts, solar panels can be a reliable source of energy.

11. Even though the Midwest has only a few months of hot summer, it's still practical to install solar panels to generate power.

12. People who care about the environment install solar panels to generate electricity.


14. Citizens concerned about the future of global warming are using solar panels to generate energy so that Americans do not have to depend heavily on coal plants for power.

15. Even though the Midwest doesn't receive as much sunlight as some of the other southern states, it is still cost effective and practical.

16. Solar energy is free and a reliable source of energy.

17. As demand for solar panels increase, prices will fall dramatically; making solar panels more affordable.

18. Using solar panels to generate electricity are safer and more reliable than any other form of producing energy.

19. With technological advances, solar panels have become lighter, durable and more dependable.

20. Excess energy produced from solar panels could be sold back to the utility company for a profit.

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. During blackouts, solar panels can be a reliable source of energy.</td>
<td>4.92</td>
<td>2.17</td>
</tr>
<tr>
<td>11. Even though the Midwest has only a few months of hot summer, it's still practical to install solar panels to generate power.</td>
<td>5.13</td>
<td>2.40</td>
</tr>
<tr>
<td>12. People who care about the environment install solar panels to generate electricity.</td>
<td>5.17</td>
<td>2.21</td>
</tr>
<tr>
<td>13. Solar panels generate energy quietly.</td>
<td>5.25</td>
<td>2.83</td>
</tr>
<tr>
<td>14. Citizens concerned about the future of global warming are using solar panels to generate energy so that Americans do not have to depend heavily on coal plants for power.</td>
<td>5.39</td>
<td>2.13</td>
</tr>
<tr>
<td>15. Even though the Midwest doesn't receive as much sunlight as some of the other southern states, it is still cost effective and practical.</td>
<td>5.54</td>
<td>1.98</td>
</tr>
<tr>
<td>16. Solar energy is free and a reliable source of energy.</td>
<td>5.67</td>
<td>2.50</td>
</tr>
<tr>
<td>17. As demand for solar panels increase, prices will fall dramatically; making solar panels more affordable.</td>
<td>5.67</td>
<td>2.08</td>
</tr>
<tr>
<td>18. Using solar panels to generate electricity are safer and more reliable than any other form of producing energy.</td>
<td>5.67</td>
<td>1.97</td>
</tr>
<tr>
<td>19. With technological advances, solar panels have become lighter, durable and more dependable.</td>
<td>5.79</td>
<td>2.04</td>
</tr>
<tr>
<td>20. Excess energy produced from solar panels could be sold back to the utility company for a profit.</td>
<td>5.88</td>
<td>2.19</td>
</tr>
</tbody>
</table>

(Table Continues)
21. Environmentally conscientious Americans know that in order to fight global warming we all have to do our part and one of the best ways to contributing is to install solar panels.  

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. Environmentally conscientious Americans know that in order to fight global warming we all have to do our part and one of the best ways to contributing is to install solar panels.</td>
<td>6.00</td>
<td>1.91</td>
</tr>
<tr>
<td>22. Energy from solar panels can sufficiently power regular household duties.</td>
<td>6.25</td>
<td>1.85</td>
</tr>
<tr>
<td>23. Solar panels will save natural resources for generations to come.</td>
<td>6.29</td>
<td>2.10</td>
</tr>
<tr>
<td>24. When harvesting solar energy, no greenhouse gases are emitted.</td>
<td>6.29</td>
<td>2.33</td>
</tr>
<tr>
<td>25. Although the initial investments for solar panels are high, in the long run people end up saving more money on electricity than those who do not use solar panels to generate electricity.</td>
<td>6.42</td>
<td>1.69</td>
</tr>
<tr>
<td>26. Installing solar panels are an efficient use of renewable sources.</td>
<td>6.42</td>
<td>2.17</td>
</tr>
<tr>
<td>27. The United States is a growing nation that consumes a large sum of energy, in order to keep up with demand we need to expand to other resources such as solar panels.</td>
<td>6.50</td>
<td>2.21</td>
</tr>
<tr>
<td>28. The offset cost of solar panels will be balanced out in a few years from the power it generates.</td>
<td>6.54</td>
<td>1.79</td>
</tr>
<tr>
<td>29. By using solar panels, Americans will curb their demand on fossil fuels and foreign oil. *</td>
<td>6.58</td>
<td>1.77</td>
</tr>
</tbody>
</table>
30. Electricity will be a major problem for our future generation if the demand continues to grow at the current rate; one solution to this problem is having Americans harvest energy through solar panels. *

31. If every household installs one kilowatt solar panel, America can reduce its dependency on foreign oil drastically. *

32. Solar energy is safer than nuclear power since it only uses everyday sunlight to generate energy. *

33. Solar energy is cleaner than burning coal since it doesn’t release any CO₂. *

34. Solar energy is more cost effective than shipping foreign oil back to America since it can be generated locally. *

35. Using solar panels will reduce America’s dependency on oil. *

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>30. Electricity will be a major problem for our future generation if the demand continues to grow at the current rate; one solution to this problem is having Americans harvest energy through solar panels. *</td>
<td>6.58</td>
<td>1.79</td>
</tr>
<tr>
<td>31. If every household installs one kilowatt solar panel, America can reduce its dependency on foreign oil drastically. *</td>
<td>6.58</td>
<td>1.89</td>
</tr>
<tr>
<td>32. Solar energy is safer than nuclear power since it only uses everyday sunlight to generate energy. *</td>
<td>6.67</td>
<td>2.22</td>
</tr>
<tr>
<td>33. Solar energy is cleaner than burning coal since it doesn’t release any CO₂. *</td>
<td>6.88</td>
<td>1.83</td>
</tr>
<tr>
<td>34. Solar energy is more cost effective than shipping foreign oil back to America since it can be generated locally. *</td>
<td>6.92</td>
<td>1.69</td>
</tr>
<tr>
<td>35. Using solar panels will reduce America’s dependency on oil. *</td>
<td>7.00</td>
<td>1.89</td>
</tr>
</tbody>
</table>

Note. * = arguments with highest or lowest mean with relatively low standard deviations used to create solar panel sales pitches.

After the recordings were completed, a research team composed of graduate and undergraduate students listened to brief, 10 second segments of 22 versions of the sales pitch (two recordings by an Indian-accented male were discarded because of an indiscernible accent) to determine what accent the communicator of the sales pitches had and how confident they were that the recording demonstrated a discernible accent (Appendix A). There were originally six male and six female sales pitches with
Midwestern-accents and four male and six female sales pitches for the Indian-accents. Based on the highest percentage of correct identifications with high confidence levels, four male and four female sales pitches with Midwestern-accents and four female sales pitches with Indian-accents were retained for use in the study. Because there were only four male sales pitches with Indian-accents, they were all retained for the study because they had a similar percentage of correct identifications compared to the other groups and high confidence ratings.

**Current Study**

**Participants**

Two hundred eighty-nine community members (male = 127, female = 162) from two midwestern cities evaluated a sales pitch (26% cooperation rate). All participants were 18 years old or older ($M_{age} = 36.55$, $SD = 17.33$). Sixty participants’ data were discarded because recruitment guidelines were not followed, leaving a sample size of 224 (males = 104, female =120). In one of the data collection sessions, a research assistant recruited participants by telling them that they were going hear a persuasive speech on solar panels. The entire session was discarded because forewarning has been known to reduce the effects of persuasion (Petty & Cacioppo, 1979a). Male and female research assistants recruited participants from a local mall and two public libraries, with special permission from the general manager of the mall and the director of the two libraries (see Appendix B). At the local mall, participants were recruited at the “T” section between the shops and the food court. At the first library, participants were recruited inside the atrium, between the entrances and exits to the library. At the second library, participants were
recruited at the steps of the library, in front of its entrance. Researchers recited a scripted message in order to elicit participation (Appendix C). Data were collected from mid October to mid November 2008.

Materials

Participants listened to the sales pitch using a personal digital assistant (PDA) and noise canceling headphones. The PDA stored all 16 versions of the sales pitch and served as an audio player. Noise canceling headphones were used to reduce the aural distraction within the surrounding area.

Design and Procedure

This study used a 2 (accent, Midwestern vs. Indian) x 2 (need for cognition, low vs. high) x 2 (argument quality, weak vs. strong) factorial design. All data collection sessions included three researchers, two of whom recruited participants while the third prepared recordings to be played on the PDA and sanitized the headphones after every use.

Community members were approached by a trained male or female White researcher with a Midwestern-accent. These members were asked to listen to and evaluate a sales pitch. After gaining consent, participants completed the first half of the paper questionnaire and were told to go to the researcher with the PDA when they got to the “stop” page on the questionnaire (see Appendix D). Participants reported demographic data and completed the Need for Cognition Scale (Cacioppo, Petty, & Kao, 1984). The “stop” page let the participants know that the sales pitch would only be played once, that they should listen carefully during the sales pitch, and that they could complete
the rest of the questionnaire after they listened to the sales pitch. A number in the lower right hand side of the “stop” page indicated which sales pitch version the participant was randomly assigned. Participants came to the third researcher when they got to the “stop” page. The third researcher was the primary investigator in this study, an Asian-American man with a Midwestern accent. I played the specified sales pitch for participants using the PDA. After hearing the sales pitch, participants completed a paper and pencil survey measuring willingness to buy solar panels, message evaluation, attitudes towards solar panels, quality of arguments, perceived distraction, current mood, and whether the person reading the sales pitch had a discernible accent. Participants were debriefed by reading the last page of the questionnaire packet.

Measures

Demographics. Participants reported their age, sex, ethnicity, level of education, citizenship status, political orientation, and whether American English was their native language (see Appendix E).

Need for cognition. The Need for Cognition Scale (NCS) is an 18-item scale measuring the extent to which a person enjoys thinking (Cacioppo et al., 1984). Participants rated all 18 statements on a scale of 1 (extremely uncharacteristic of you) to 5 (extremely characteristic of you). These 18 items were averaged and a median split (median = 3.46) created low and high groups for need for cognition (α = .88; see Appendix F).

Willingness to buy. This single item measured people’s likelihood to buy solar panels after hearing the sales pitch on a 9-point scale: “How likely would you be willing
to buy solar panels after hearing this sales pitch?" (1 = not very likely, 9 = very likely; see Appendix G).

**Message evaluation.** Participants responded to the following four questions about the sales pitch using a 9-point scale: (1) “To what extent do you believe the sales pitch made its point effectively?” (1 = not at all, 9 = completely); (2) “To what extent did you like the sales pitch?” (1 = not at all, 9 = very much); (3) “To what extent do feel the sales pitch was convincing?” (1 = not at all convincing, 9 = very convincing); (4) “Considering both content and style, how clear and was the sales pitch?” (1 = not very clear, 9 = very clear). This measure was adapted from Cacioppo et al. (1983). An average of these four questions was used to create a message evaluation index (α = .92; see Appendix H).

**Attitudes index.** Participants completed four semantic differential scales (good/bad, beneficial/harmful, wise/foolish, favorable/unfavorable) on a 9-point scale to indicate their attitudes towards solar panels. An average of these four items was used to create an attitude index (α = .90; see Appendix I).

**Supplementary measures.** Participants rated the quality of the arguments used in the sales pitch on a scale of 1 (very weak arguments) to 9 (very strong arguments). Participants completed two items on how distracted they felt during the study: (1) “I felt distracted while listening to the sales pitch” (1 = not distracted at all, 9 = very distracted); (2) “There were distractions in the surrounding area while I was completing this survey” (1 = not true at all, 9 = very true), (α = .40). Because of the low reliability, items were used separately in the analyses. Participants completed two items assessing their current mood: (1) “My current mood is...” (1 = Sad, 9 = Happy); (2) “As of right
now I am feeling... (1 = Depressed, 9 = Elated; α = .90; see Appendix J). These two items were adapted from Petty, Schumann, Richman, and Stratham (1993).

**Accent manipulation check.** Participants indicated whether the sales pitch they just heard was spoken by a Midwestern-accented speaker of American English or an accented speaker of English (see Appendix J).
CHAPTER 3

RESULTS

Manipulation Checks

Participants who heard the Midwestern-accented sales pitch correctly identified the accent 89% of the time. Those who heard the Indian-accented sales pitch correctly identified the accent 66% of the time, and an additional 27% of the participants identified the accent as a “Chinese-accented.” Those who did not correctly identify the type of accent they were assigned to were excluded from further analyses. However, those who were assigned the Indian-accented sales pitch who indicated that it was a “Chinese-accented” speaker of English were kept in for two reasons. First, they recognized that the Indian-accent was a foreign accent. Second, their data were kept in to increase statistical power. The manipulation check discarded an additional 29 participants’ data, leaving 200 community members’ data for further analyses. A 2 (argument quality) x 4 (Indian actor) Fisher’s Exact Test was run to see if one condition was marked “Chinese-accented” more than another. This analysis showed that no particular Indian-accented condition was marked as “Chinese-accented” more than any other (ps > .70).

To ensure that the quality of the argument manipulation was effective, an independent samples t-test was run on the item “The quality of the arguments for solar panels were…” with argument quality as an independent variable, $t(197) = 2.63, p = .009, d = .37$. Strong arguments ($M = 4.90, SD = 2.01$) were rated as significantly stronger than weak arguments ($M = 4.11, SD = 2.22$).
A histogram revealed that need for cognition scores were fairly normally distributed, although there was negative skew (see Figure 1). Community members were categorized as high or low in need for cognition by a median split (median = 3.46; low need for cognition range = 1.78 – 3.44; high need for cognition range = 3.44 – 5.00. There was not a correlation between age and need for cognition scores $r(197) = .007, p > .90$, although a previous study on need for cognition on an older community sample showed that as people age their need for cognition tend to decrease. The median score for that community sample was 2.82 (low need for cognition range = 1.07 – 2.82; high need for cognition range = 2.83 – 5.00; Spotts, 1994). The need for cognition scores of the current community sample were similar to the scores of typical college students with a median score of 3.52 (low need for cognition range = 1.94 – 3.52; high need for cognition range = 3.53 – 4.75; Haugtvedt & Petty, 1992).
Preliminary Analyses

Sixteen sales pitch versions were created for this study (2 accents x 2 samples x 2 sexes x 2 argument strength; see Table 2). These analyses were conducted to examine how different versions of each sales pitch differed by voice versions (e.g., how similar Female 1 and Female 2 were; see Table 2) and sex. To the extent to which these versions are similar, they allow for the collapsing the 16 versions into 4 versions, giving more statistical power for further analyses. Preliminary analyses were also conducted to
determine which covariates had an effect on the dependent variables and would be retained for further analyses.

Table 2. *Breakdown of Different Versions.*

<table>
<thead>
<tr>
<th></th>
<th>Midwestern-accent</th>
<th>Indian-accent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strong</td>
<td>Weak</td>
</tr>
<tr>
<td>Male 1</td>
<td>Female 1</td>
<td>Male 1</td>
</tr>
<tr>
<td>Male 2</td>
<td>Female 2</td>
<td>Male 2</td>
</tr>
<tr>
<td>Male 3</td>
<td>Female 3</td>
<td>Male 3</td>
</tr>
<tr>
<td>Male 4</td>
<td>Female 4</td>
<td>Male 4</td>
</tr>
</tbody>
</table>

*Voice version and sex of voice.* Three 2 (accent, Indian vs. Midwestern) x 2 (need for cognition, high vs. low) x 2 (argument quality, strong vs. weak) x 2 (voice version, version 1, version 2) ANOVAs were run with message evaluation, attitude index, and willingness to buy as dependent variables. For message evaluation, there were no significant main effects for voice version; however, there was a two-way interaction between voice version and quality of argument, $F(1, 184) = 7.00, p = .009, \eta^2 = .04$. Breaking down the two-way interaction, for weak arguments, voice version 1 ($M = 3.65, SE = .28$) was evaluated more negatively than voice version 2 ($M = 4.91, SE = .28$), $F(1, 92) = 10.58, p = .002, \eta^2 = .10$. For strong arguments, there were no significant differences between voice versions, $F < 1, p > .60$. 
For attitude index, there were no significant main effects or interactions. For willingness to buy, there were no significant main effects; however, there was a significant interaction between voice version and argument quality, $F(1, 184) = 4.38, p = .04, \eta^2 = .02$. Breaking down this interaction, there were no significant simple effects between the different voice versions, $Fs < 3.5, ps > .07$. Thus, with the exception of analyses of message evaluation, which had a significant interaction with voice version and weak arguments, voice version was removed as a variable from further analyses.

Similarly, three 2 (accent, Indian vs. Midwestern) x 2 (need for cognition, high vs. low) x 2 (argument quality, strong vs. weak) x 2 (sex of voice, male vs. female) ANOVAs were run using the same dependent variables. For message evaluation, there was not a significant main effect of sex of voice; however, there was an interaction between sex of voice and accent type. Breaking down this two-way interaction revealed that people who heard the Indian-accented sales pitch evaluated the sales pitch from a female ($M = 3.52, SE = .28$) voice more negatively than that from a male ($M = 4.50, SE = .27$) voice, $F(1, 98) = 6.42, p = .013, \eta^2 = .06$, thus sex of voice was entered as a covariate for message evaluation for subsequent analyses.

For attitude index, there was not a significant main effect for sex of voice; however, there was a interaction between argument quality, need for cognition, and sex of voice, $F(1, 183) = 4.74, p = .03, \eta^2 = .03$. Breaking down this interaction revealed no significant simple effects, $Fs < 2.60, ps > .10$. For willingness to buy, there were no significant main effects of sex of voice or any interactions with it. Thus, only message evaluation has sex of voice entered as a covariate in subsequent analyses. These analyses
revealed that voice version and sex of voice had minimal effects on the dependent variables, therefore allowing for the collapse of the 16 sales pitch versions into 4 distinct sales pitches (argument quality, strong vs. weak) x (accent, Midwestern vs. Indian) for the dependent variables of attitude index and willingness to buy.

**Covariates.** The following analyses were conducted to examine whether demographics, mood, or types of distraction affected the dependent variables. Three 2 (accent, Midwestern vs. Indian) x 2 (need for cognition, low vs. high) x 2 (argument quality, weak vs. strong) ANCOVAs were run with message evaluation, attitude index, and willingness to buy as dependent variables controlling for age, sex, education level, the extent to which people felt distracted, the extent to which people felt distracted by their surroundings, and current mood. For message evaluation, only the extent to which people felt distracted was a significant covariate, \( F(1, 183) = 12.92, p < .001, \eta^2 = .07. \) All other covariates were left out of future analyses of message evaluation. For attitude index, only education was a significant covariate, \( F(1, 182) = 10.53, p = .001, \eta^2 = .06. \) Only education was be used as a covariate on subsequent analyses for attitude index. For willingness to buy, no covariates were significant. Covariates were not be used in further analyses examining willingness to buy.

**Hypothesis Testing**

The alpha level set for this study is \( p < .05. \) However, interactions with \( p < .10 \) were addressed as marginally significant to more fully test the hypotheses, given the large number of independent variables being tested. These marginally significant interactions were broken down in order to address the hypotheses.
Message Evaluation

I ran a 2 (accent, Midwestern vs. Indian) x 2 (need for cognition, low vs. high) x 2 (argument quality, weak vs. strong) ANCOVA examining message evaluation while controlling for voice version, sex of voice, and the extent to which people felt distracted. This analysis revealed significant main effects for argument quality and accent type, a marginally significant two-way interaction between argument quality and need for cognition, and a marginally significant three-way interaction of accent, need for cognition, and argument quality (see Table 3). Overall, participants evaluated sales pitches with strong \( (M_{adj} = 5.03, S_x = .19) \) arguments more positively than sales pitches with weak \( (M_{adj} = 4.32, S_x = .19) \) arguments. They also evaluated Midwestern-accented \( (M_{adj} = 5.20, S_x = .20) \) sales pitches more positively than Indian-accented \( (M_{adj} = 4.15, S_x = .19) \) sales pitches.\(^2\)
Table 3. *Message evaluation as a function of argument quality, accent type, and need for cognition*

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex of Voice</td>
<td>7.09</td>
<td>1</td>
<td>7.09</td>
<td>2.19</td>
<td>.141</td>
<td>.01</td>
</tr>
<tr>
<td>Voice Version</td>
<td>14.43</td>
<td>1</td>
<td>14.43</td>
<td>4.46</td>
<td>.036</td>
<td>.02</td>
</tr>
<tr>
<td>Perceived Distractions</td>
<td>47.70</td>
<td>1</td>
<td>47.70</td>
<td>14.39</td>
<td>.000</td>
<td>.07</td>
</tr>
<tr>
<td>Argument Quality</td>
<td>23.25</td>
<td>1</td>
<td>23.25</td>
<td>7.19</td>
<td>.008</td>
<td>.04</td>
</tr>
<tr>
<td>Accent Type</td>
<td>45.66</td>
<td>1</td>
<td>45.66</td>
<td>14.11</td>
<td>.000</td>
<td>.07</td>
</tr>
<tr>
<td>Need for Cognition (NCS)</td>
<td>0.35</td>
<td>1</td>
<td>.35</td>
<td>.11</td>
<td>.743</td>
<td>.00</td>
</tr>
<tr>
<td>Argument Quality x Accent Type</td>
<td>2.43</td>
<td>1</td>
<td>2.43</td>
<td>.75</td>
<td>.388</td>
<td>.00</td>
</tr>
<tr>
<td>Argument Quality x NCS</td>
<td>10.39</td>
<td>1</td>
<td>10.39</td>
<td>3.21</td>
<td>.075</td>
<td>.02</td>
</tr>
<tr>
<td>Accent Type x NCS</td>
<td>5.08</td>
<td>1</td>
<td>5.08</td>
<td>1.57</td>
<td>.212</td>
<td>.01</td>
</tr>
<tr>
<td>Argument Quality x Accent Type x NCS</td>
<td>10.23</td>
<td>1</td>
<td>10.22</td>
<td>3.16</td>
<td>.077</td>
<td>.02</td>
</tr>
<tr>
<td>Error</td>
<td>611.63</td>
<td>189</td>
<td>3.24</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. n = 200*

Breaking down the two-way interaction between argument quality and need for cognition, for people with low need for cognition, there was a significant simple effect for argument quality. People with low need for cognition evaluated the message more positively after listening to sales pitches with strong ($M_{adj} = 5.30, S_x = .24$) rather than weak ($M_{adj} = 4.09, S_x = .27$) arguments, $F(1, 92) = 10.99, p = .001, \eta^2 = .11$. However, people with high need for cognition were not affected by argument quality, $p > .50, F < 1.00$.

Breaking down the three-way interaction, for people with low need for cognition, there were significant simple effects for accent type and argument quality and no interactions. Low need for cognition people evaluated the message more positively after...
listening to sales pitches with Midwestern-accents ($M_{adj} = 5.39, S_x = .23$) than Indian-accents ($M_{adj} = 3.99, S_x = .29$), $F(1, 92) = 14.09, p < .001, \eta^2 = .13$ (see Figure 2). Interestingly, there was also a significant simple main effect for argument quality, $F(1, 92) = 10.99, p = .001, \eta^2 = .11$ (see Figure 3). People with low need for cognition evaluated the message more positively when there were strong ($M_{adj} = 5.29, S_x = .24$) rather than weak arguments ($M_{adj} = 4.09, S_x = .27$). People with low need for cognition were affected by accent type as predicted; however, their message evaluation was also affected by argument quality. These findings provided partial support for hypothesis 1.

On the other hand, breaking down the three-way interaction for people with high need for cognition revealed no significant simple main effects or interactions, $Fs < 3.1, ps > .08$. People with high need for cognition evaluated messages similarly for Midwestern- ($M_{adj} = 4.97, S_x = .33$) and Indian-accented ($M_{adj} = 4.32, S_x = .24$) sales pitches, $F(1, 94) = 2.42, p = .12$ (see Figure 2). Surprisingly, they also did not differentiate between strong ($M_{adj} = 4.77, S_x = .28$) vs. weak ($M_{adj} = 4.52, S_x = .27$) arguments, $F(1, 94) = .39, p = .53$ (see Figure 3). People with high need for cognition were unaffected by accent type as predicted by hypothesis 2; however, argument quality also did not affect them. These findings provided partial support to hypothesis 2.
Figure 2. Message evaluation as a function of accent type and need for cognition (NCS) level.

Figure 3. Message evaluation as a function of argument quality and need for cognition (NCS) level.
Supplementary Analyses

**Attitude index.** A 2 (accent, Midwestern vs. Indian) x 2 (need for cognition, low vs. high) x 2 (argument quality, weak vs. strong) ANCOVA examining attitude index while controlling for education level was conducted. It revealed a marginally significant three-way interaction between accent, need for cognition, and argument quality (see Table 4).

Breaking down the three-way interaction for people with low need for cognition revealed no significant simple main effects or interactions. Low need for cognition people’s attitudes were not affected by Indian-accented ($M_{adj} = 6.60, S_x = .33$) vs. Midwestern-accented ($M_{adj} = 7.05, S_x = .27$) sales pitches. They were also not affected by strong ($M_{adj} = 7.13, S_x = .29$) vs. weak ($M_{adj} = 6.52, S_x = .31$) arguments (see Figures 4 and 5).

Breaking down the three-way interaction for people with high need for cognition revealed that their attitudes were not affected by Indian-accented ($M_{adj} = 7.44, S_x = .22$) vs. Midwestern-accented ($M_{adj} = 7.76, S_x = .30$) sales pitches. They were also not affected by strong ($M_{adj} = 7.47, S_x = .27$) vs. weak ($M_{adj} = 7.73 S_x = .26$) arguments (see Figures 4 and 5).
Table 4. *Attitude Index as a Function of Argument Quality, Accent Type, and Need for Cognition.*

**ANOVA**

<table>
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<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
<th>$\eta^2$</th>
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*Note. n = 198*

![Figure 4. Attitude index as a function of accent type and need for cognition (NCS) level.](image-url)
Figure 5. Attitude index as a function of argument quality and need for cognition (NCS) level.

Willingness to buy. A 2 (accent, Midwestern vs. Indian) x 2 (need for cognition, low vs. high) x 2 (argument quality, weak vs. strong) ANOVA examining willingness to buy was run. The analysis revealed a significant main effect for accent type and a significant three-way interaction (see Table 5). The main effect indicated that, overall, people were more likely to indicate that they would buy solar panels after hearing a Midwestern-accented sales pitch ($M = 5.20$, $SE = .25$) than an Indian-accented sales pitch ($M = 4.47$, $SE = .23$; see Figure 6).

Breaking down the three-way interaction for people with low need for cognition revealed two simple main effects for accent type and argument quality and no interactions. People with low need for cognition were more willing to buy solar panels after hearing a Midwestern-accented sales pitch ($M = 5.24$, $SE = .29$) than an Indian-
accented sales pitch \((M = 4.24, SE = .36)\), \(F(1, 95) = 4.67, p = .033, \eta^2 = .04\). They were also more likely to indicate a willingness to buy if they heard a sales pitch with strong \((M = 5.25, SE = .31)\) rather than weak \((M = 4.23, SE = .34)\) arguments, \(F(1, 95) = 4.86, p = .03, \eta^2 = .05\) (see Figure 7).

On the other hand, breaking down the three-way interaction for people with high need for cognition revealed no significant simple effects for argument quality or accent type, \(Fs < 1, p > .35\). However, there was a significant interaction between accent type and argument quality, \(F(1, 97) = 4.48, p = .04, \eta^2 = .04\). Breaking down this two-way interaction revealed no significant simple effects, \(Fs < 4, ps > .05\) (see Figure 8).

Table 5. Willingness to buy as a Function of Argument Quality, Accent Type, and Need for Cognition.

<table>
<thead>
<tr>
<th>Source of Variation</th>
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<th>df</th>
<th>MS</th>
<th>(F)</th>
<th>(p)</th>
<th>(\eta^2)</th>
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Note. \(n = 200\)
Figure 6. Willingness to buy as a function of accent type and need for cognition (NCS) level.

Figure 7. Willingness to buy as a function of argument quality and need for cognition (NCS) level.
Figure 8. Willingness to buy as function of high need for cognition, argument quality, and accent type.

Two additional hierarchical regressions were run predicting willingness to buy to examine what effects message evaluation and attitude index had on willingness to buy. The first regression inputted sex of voice, voice version, the extent to which people felt distracted, and education level as step 1, message evaluation as step 2, and attitude index as step 3. This analysis indicated that attitude index accounted for 2% of the change in willingness to buy, $\beta = .14$, $t(194) = 2.79$, $p = .006$. The second regression switched steps two and three. This analysis revealed message evaluation accounted for 40% of variance on willingness to buy, $\beta = .72$, $t(194) = 13.11$, $p < .001$ (see Tables 6 and 7). These analyses show that message evaluation is a far better predictor of willingness to buy than attitude index.
Table 6

*Summary of Hierarchical Regression Analysis Predicting Willingness to Buy with Attitude Index Evaluation*

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<th>t</th>
<th>p</th>
<th>R²</th>
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Table 7

Summary of Hierarchical Regression Analysis Predicting Willingness to Buy with Message Evaluation

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<th>Step</th>
<th>B</th>
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<th>β</th>
<th>t</th>
<th>p</th>
<th>R²</th>
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The results from this study indicated that people with low need for cognition were affected by argument quality and accent type, whereas people with high need for cognition were not affected by argument quality nor accent type. Message evaluation was a better predictor of willingness to buy than the attitude index.

For people with low need for cognition, accent type affected the evaluation of a sales pitch, as predicted. People with low need for cognition tended to favor Midwestern-accented rather than Indian-accented sales pitches. One possible reason for this finding is that people with low need for cognition may have processed the Indian-accented sales pitch as a negative peripheral cue. The elaboration likelihood model (Petty & Cacioppo, 1986) proposes that peripheral cues are cues that affect attitudes when there is an absence of motivation or ability to think. This result is consistent with previous research that has found that people who speak English with an accent are typically viewed more negatively than those who speak English fluently (Birch & McPhail, 1997; Cargile & Giles, 1997; Frumkin, 2007).

Two other theories may also help explain why individuals low in need for cognition may evaluate Indian-accented sales pitches more negatively. First, it could be the case that individuals did not discriminate against Indian-accented English speakers, but rather they identified more with the Midwestern-accented English speakers. Social identity theory (Tajfel, 1970) states that people identify more with their in-group and evaluate their in-group more positively than out-groups to which they do not belong. This
theory suggests that Midwesterners would evaluate Midwestern-accented sales pitches more favorably than Indian-accented sales pitches because they would identify more with the Midwestern-accented English speaker.

Second, consistent with mere exposure, it could be that people who have a neutral or positive attitude towards an accent prefer the accent they have been more exposed to (Zajonc, 1968). Therefore, if Midwesterners have a neutral or positive attitude toward a Midwestern-accent, then hearing a Midwestern-accented sales pitch would elicit more positive evaluations to a Midwesterner. However, neither social identity theory nor mere exposure would explain why accent type affected only people with low need for cognition and not those with high need for cognition.

Surprisingly, people with low need for cognition were also affected by argument quality, giving more positive evaluations to sales pitches that had strong arguments rather than weak arguments. Previous research with the elaboration likelihood model has consistently showed that people with lower need for cognition tend to be less affected by argument quality than people with higher need for cognition (Petty & Cacioppo, 1979b; Petty, Cacioppo, & Goldman, 1981). It is unclear why in this particular study people with low need for cognition were affected by argument quality. It could because this particular group of low need for cognition people were personally involved in energy conservation and thus evaluated strong and weak arguments advocating the use of solar panels using the central route, processing the message content. Indeed, personal involvement is often used instead of need for cognition to determine who will process a message centrally vs. peripherally (Petty & Cacioppo, 1979b).
People with high need for cognition, on the other hand, were not affected by Indian- or Midwestern-accented sales pitches, as predicted. They evaluated Indian-accented and Midwestern-accented sales pitches similarly. The elaboration likelihood model suggests that this group should not be affected by accents because people with high need for cognition are motivated to think and process the arguments thoughtfully.

Surprisingly, people with high need for cognition were not affected by argument quality either. One possible explanation for this could be that people with high need for cognition have the motivation to think critically about the sales pitch, but their ability to do so was limited by surrounding distractions. Previous research has shown that elaboration can be negatively affected by distractions (Petty, Wells, & Brock, 1976). In essence, people with high need for cognition may have tried to process the arguments, but surrounding distractions and other environmental factors may have kept them from performing to the best of their ability. Of course, it is unclear why these distractions would only affect people with high need for cognition and not people with low need for cognition.

Although this study used a community sample in a field study, these effect sizes for people with low need for cognition with argument quality and accent type are similar in magnitude to previous studies that found the interaction between argument quality and need for cognition in laboratory studies. In a meta-analytical study, the average effect sizes of studies that have found the argument quality and need for cognition interaction is small, $d = .32$ and the average effect size for need for cognition is moderate, $d = .54$ (Cacioppo et al, 1996). These findings show that people with high need for cognition
were more affected by argument quality than people with low need for cognition, whereas this study found that people with low need for cognition were more affected by accent type and argument quality. The effect sizes for the simple effects for people low in need for cognition with argument quality and accent type in this study were moderate, $d = .69$, $d = .78$, respectively. Although these results differ from previous studies, they have similar effect sizes.

The results for willingness to buy mirrored the results of message evaluation. People with low need for cognition were affected by argument quality and accent type, whereas people with high need for cognition were not affected by argument quality or accent type. In fact, hierarchical regression analyses indicated that message evaluation was more related to willingness to buy than the attitude index. Message evaluation accounted for 40% of the variance in willingness to buy, whereas the attitude index only accounted for 2% of the variance. These results may indicate that positive message evaluations are more highly related to behavioral intentions to buy solar panels than attitudes are.

**Contributions of the Study**

The results from this study contribute to both the communication and psychological attitude literatures. It is one of the few studies that has examined attitudes towards Indian-accented speech. This study showed that people with low need for cognition evaluated sales pitches by an Indian-accented English speaker more negatively than ones by a Midwestern-accented English speaker. This finding is consistent with previous research on other accents (Cargile & Giles, 1997; Frumkin, 2007). The study
contributes to persuasion research by showing Indian-accented English serves as a negative peripheral cue. People with low in need for cognition typically have less motivation to think about issues critically. When they were exposed the Indian-accented sales pitches, people with low need for cognition consistently evaluated Indian-accented sales pitches more negatively than Midwestern-accented sales pitches.

This study also adds to the elaboration likelihood model literature. This model posits that people who are not able and motivated to think are more likely to take the peripheral route to persuasion, whereby they rely upon simple cues available in the message to process their persuasion whereas those who are able and motivated to think are more likely to take the central route to persuasion, whereby they examine the relevant information at hand to process their persuasion (Petty & Cacioppo, 1986). In this study, people’s motivation of thinking was measured through the need for cognition scale (Cacioppo & Petty, 1982), a scale that measures the extent to which a person likes to think. People with low need for cognition, even when the content of the sales pitches was identical, rated the Indian-accented sales pitch more negatively than the Midwestern-accented sales pitch. This finding gives support for the model because people with low need for cognition tended use the Indian accent as a negative peripheral shape their evaluations. However, as mentioned previously, it is surprising that people with low need for cognition rated the message more positively when it had strong rather than weak arguments.

People with high need for cognition evaluated Indian- and Midwestern-accented sales pitches similary, as predicted. Accents were not used as a peripheral cue; one
reason this could be is because people with high need for cognition were trying to evaluate the sales pitch based on the contents of its message. However, as the results indicated, people with high need for cognition also did not evaluate sales pitches with strong and weak arguments differently. Overall, people with low need for cognition were affected by peripheral cues and argument strength and people with high need for cognition were not affected by peripheral cues or argument strength. These results gave partial support for the elaboration likelihood model.

It should be noted, however, that the main dependent variable in this study was message evaluation, whereas attitude index is typically used in most elaboration likelihood model research. As mention previously, message evaluation was used as the main dependent variable over attitude index because of its better sensitivity to detect an interaction between argument quality and need for cognition (Cacioppo et al., 1983).

The study also incorporated several different voices of both sexes to account for accent differences. Depending on the regional dialect, in the Midwest or India, accents may vary. Realism is enhanced with multiple voices of the male and female actors. The different voices simulated what a community member may to hear when talking to an Indian-accented speaker of English from a call center in India or Midwestern-accented speaker of English from a telemarketing company in the United States.

In addition to these contributions, this study has higher external validity than previous studies in the laboratory because it used a community sample as opposed to a college sample. Laboratory research has heavily depended on college students; these students have been found to have less crystallized attitudes (Sears, 1986). Using a
community sample for this study is better because these people may actually own houses and have the financial backing to buy solar panels, whereas the typical college student may not. It is also one of the few studies that has examined need for cognition using a community sample as opposed to a college sample. This research builds on past research by controlling for perceived distraction (Petty et al., 1976; Petty et al., 1993), rate of speech (Smith & Shaffer, 1991; 1995), and current mood (Petty et al., 1993), which have been shown to affect people's attitudes.

Limitations and Future Studies

Like any other study, this study has its limitations. The pilot study was completed on a student sample, but used for a community sample. This difference may be a problem because the typical college students' attitudes towards solar panels may not be the same as a community members'; again, college students' attitudes may not be as crystallized as a typical community members' (Sears, 1986). Although a community sample was used in data collection, it was a convenience sample. This type of sample may also be a problem because perhaps only people who are interested in solar panels or energy conservation wanted to help. In this study, researchers recruited participants by asking participants to help "evaluate" a solar panel sales pitch for a marketing project. This problem can be mitigated in future research by assessing people's interests and personal involvement in energy conservation and statistically controlling for it.

This study also did not take into consideration that in a real world environment, such as a call center in India, grammatical errors may be made by Indian-accented English speakers that may affect message evaluation and credibility. In this study, every
person whose voice was used in the creation of these sales pitches read from the script created from the pilot study, limiting grammatical errors. Also in this study, community members listened to a sales pitch, whereas in a real life situation it would be a conversation between the buyer and the consumer. A conversation with a customer may change the dynamics of the sales pitch, making it different from customer to customer. Companies that primarily conduct sales through the telephone could use sales pitch points for a more natural conversation as opposed to using a recorded sales pitch which may sound scripted and untailored to the customer’s needs. One way to have better ecological validity would be to have a company give customers a survey on their attitudes after they have complete their service center call. This company must have both workers in the United States (non-accented) and foreign countries (accented) and a standard operating procedure followed by both group of workers. Another way to improve ecological validity in the laboratory setting would be to transcribe a real dialogue between a customer and worker to text and record the interaction between the two people while manipulating the accent of the worker. Then participants could listen to the conversation and evaluate the worker’s performance. These future studies could tell us more about the effects of accented English while keeping the realism of the workplace. Another concern is that people who heard the Indian-accented sales pitch sometimes marked the manipulation check as a “Chinese-accented speaker of English.” It is unclear whether people did not know the difference between an Indian- and a Chinese-accent, or if they did not know what an Indian-accented person may sound like, or if they were not listening carefully. Those people who indicated that they heard a sales pitch from a
Chinese-accented speaker of English may not have paid attention to the sales pitch, undermining the manipulation. It is also possible that the presence of an Asian-American (with non-accented English) may have cued the participants to think of Chinese accents. A future study could replicate this study with a White primary researcher to see if community members mark “Chinese-accented” as frequently as when there was an Asian experimenter.

Previous research on the elaboration likelihood model using the need for cognition as a variable typically uses a median split to separate people with high need for cognition from people with low need for cognition in order to run ANOVAs (Cacioppo et al., 1996; Petty & Cacioppo, 1984, 1986). In doing so, some of the variability in need for cognition is limited because it is forced into a dichotomous variable. This was done here as well to be consistent with previous research. However, because need for cognition is a continuous variable, regression analyses would have provided more power.

The data were collected at public places and in a local mall. This study measured distractions, controlled for it statistically, and reduced it with noise cancelling headphones, but other distractions could have affected the results. People who like to think or were able and motivated to think may have been distracted and not performed as well they would in a controlled environment. An advantage to field studies is that they are more generalizable, but it is more difficult to say that the results are because of the manipulation. On the other hand, an advantage to a lab study is that there is more control over the environment in which the independent variable is manipulated; however, generalizability in a lab study is lower because people do not live in vacuums where only
one factor is manipulated. These two different types of studies have their advantages and disadvantages; they should both be used accordingly to progress psychological studies. Future studies should replicate this study in a lab setting to see if similar results are obtained.

An energy survey conducted in Iowa in 2007 showed that Iowans did not have positive attitudes towards solar panels (Losch & Nguyen, 2007). This study, however, was completed within a two month period in the fall of 2008. By this time, attitudes towards solar panels may have shifted to become more positive ($M = 7.21$ on a 1-9 scale, $SE = .14$). Gasoline prices were at an all time high, the 2008 election was in progress, and the prospects of creating a new coal power plant in the local area may have created much debate about energy conservation and curbing our dependency on foreign oil. Future studies should replicate this study to see if similar results yield when there is minimal debate over energy conservation.

In the analyses of this study, voice version was entered as a fixed effect; however, it would have been more appropriate to enter it as a random effect because it is a sample of what a traditional Midwestern- or Indian-accent may sound like. Voice version was not entered as a random effect because it may have yielded high-order interactions with extremely high $F$ values that might be complex and confusing to explain due to all the interactions with independent variables involved in this study (A. Gilpin, personal communication, March 20, 2009). Fixed effects were used to pool the variance between the different versions of the each accent because the main goal of this study was examine the effects of accents, not to determine whether or not particular accents generalize. The
main goal of this study was to examine the effects of Indian-accented English vs. Midwestern-accented English sales pitches, not to see if all Indian accents have similar effects on people. Future studies could examine whether Indian accents in general have the similar effects on an array of people and analyze it as a random effect.

**Practical Implications**

This study showed how variables such as need for cognition, accent type, and argument strength affected people's evaluation of a sales pitch, and ultimately how their evaluation was related to their buying intentions. In a sales setting, variables such as need for cognition and accent type may be difficult to manipulate. Individual differences in need for cognition may be hard to gauge for every customer given the limited amount of time an employee has with a customer. This finding makes targeting specific messages to people with high or low need for cognition quite complicated. Employees who speak accented-English will find that an accent is difficult to lose. Most companies will not pay to train their employees to lose their accent for two obvious reasons; it is costly and ineffective because accent retention is very likely after the age of 13 (Asher & García, 1969). Argument strength, on the other hand, is something that could be manipulated rather easily. A list of arguments could be generated, pretested, honed, and eventually used to elicit more favorable attitudes about the product at hand. One practical implication from this study is that if a company currently located in India, such as Dell, does not want to hire employees with Midwestern-accents, yet they still want to positively influence their customers about their product, they could train their employees to state strong arguments when trying to sell consumers their product. Granted it would
not be as influential having both Midwestern-accented speakers of English and strong arguments, but it is a good start.

Before any company decides to take action and implement an intervention, it should be able to answer the following question, “Is intervention is practical?” Whether or not a company decides invest in an intervention should be reflected by a return on investment analysis with one of the driving questions being, “Is an intervention that may improve message evaluation by one point (about the effect size in this study) worth the cost?” The answer to this may vary from company to company. It may be practical to have an accent reduction intervention or workshop on honing argument quality only if a company can make enough money to offset the cost of the intervention. However, it may be impractical to carry out an intervention if the costs are greater than the return on investment. Each company must decide for itself whether an intervention is prudent, prior to investing a large sum of money into an intervention.

Another practical implication of this study is that accent affects message evaluation. People’s evaluations were highly related to willingness to buy. Thus, it may behoove a company to keep their business in the United States where American consumers can interact with native speakers of English. Succinctly put, outsourcing jobs may cost companies financially because of the relationship between people’s evaluations and their willingness to buy.

The United States is a diverse country where people from many walks of life come to work, study, and do business. It is obvious that with great diversity comes a plethora of accents. Americans come to depend on labor provided by incoming
immigrants, economic stimulus from international students, and other support services provided by employees hired by American companies overseas. They are an important component of the United States economy. Accented English speakers such as immigrants and international students may utilize this knowledge to alter others’ evaluation of their messages, and companies overseas may benefit greatly if they have employees with native-accents advocate their products with strong arguments.

Immigrants who come to the United States seeking better opportunities, international students who come here to study, and international people that are hired by American companies overseas must keep in mind that their accented English plays a role in shaping people’s evaluations and willingness to purchase a product, but so does the quality of the arguments they use to convey their message.
It should be noted that the elaboration likelihood model (Petty & Cacioppo, 1986) and the heuristic-systematic model (Chaiken, Liberman, & Eagly, 1989) are similar to each other. Both models predict that attitudes can be changed by careful consideration of a persuasive message or less cognitive effort. The central route to persuasion parallels the systematic processing mode. Systematic processing is a process in which people access and scrutinize information for its relevance to the task at hand (Chaiken et al., 1989). However, there are key differences between the two models. The concept of peripheral route to persuasion and heuristic processing are different from each other. As mentioned previously, the peripheral route to persuasion occurs when people are not motivated to think about the relevant issue and allow peripheral cues to guide their judgment (Petty & Cacioppo, 1986). On the other hand, the heuristic processing occurs when people focus on a subset of information that allows them to make simple decision rules (Chaiken et al., 1989). Both models agree that people are not scrutinizing all of the relevant information presented to them when the peripheral route to persuasion or the heuristic process is occurring, but they disagree on the steps people take when they do not fully process all the information presented to them. Another key difference between these two models is the underlying motivation. The heuristic-systematic model suggests that people's primary concern is to attain accurate attitudes that are congruent with relevant facts (Chaiken, 1987), whereas the elaboration likelihood model suggests that people are motivated to hold correct attitudes (Petty & Cacioppo, 1986). Even though these models
are quite similar, this study addressed the hypothesis testing based only on the elaboration likelihood model for the sake of simplicity.

An ANCOVA was run with message evaluation with only those who correctly identified the accent. These results were similar to the results of the analysis with the community members who identified the Indian-accented condition as “Chinese-accented English”. Thus, those who identified the Indian-accent as a Chinese-accent were kept in to conserve power.

An ANCOVA was run with message evaluation with community members who had the top third highest and bottom third lowest need for cognition scores. These results were similar, with two of the interaction effects going from “marginally” significant to \( p \) levels below .05. The marginally significant two-way interaction of need for cognition and argument and the three-way interaction were now statistically significant using the conventional \( p < .05 \) level, \( F(1,121) = 4.57, p = .04, \eta^2 = .04 \) and \( F(1,121) = 4.15, p = .04, \eta^2 = .03 \), respectively. Using the upper and lower thirds discarded an additional 66 participants. Therefore, to conserve power, a median split was used to create high and low levels of need for cognition.
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APPENDIX A

ACCENT MANIPULATION CHECK

Please answer the questions by checking the corresponding line.

1. The person speaking in the radio commercial was a...
   ______ Native speaker of English
   ______ British-accented speaker of English
   ______ Indian-accented speaker of English
   ______ Chinese-accent speaker of English
APPENDIX B

LETTERS OF COOPERATION

Principal Investigator: Duoc Nguyen
Title: Evaluations of Solar Panel Sales Pitch

By signing this electronic contract, I agree that:

1. I have read and reviewed the questionnaire that is going to be administered

2. I am allowing UNI students to collect data on my property outside of my establishment (i.e., the parking lot or entrance of the establishment) on the following dates: from Noon to 5pm: October 18-19, October 25-26, November 1-2, and November 8-9.

If you agree to these terms,
1. Please type your name and date
2. Then reply back to Duoc Nguyen at duoc21@gmail.com

Amy R. Dutton 10/10/08
(Typed name) (Date)
Principal Investigator: Duoc Nguyen
Title: Evaluations of Solar Panel Sales Pitch

By signing this electronic contract, I agree that:

3. I have read and reviewed the questionnaire that is going to be administered

4. I am allowing UNI students to collect data on my property outside of my establishment (i.e., the parking lot or entrance of the establishment) on the week of (depending on date of approval)

If you agree to these terms,

3. Please type your name and date
4. Then reply back to Duoc Nguyen at duoc21@gmail.com

Sheryl Groskurth

(Typed name) (Date)

October 13, 2008
APPENDIX C

RECRUITMENT SCRIPT

“Hi my name is ___________ and I am a student at University of Northern Iowa. I was wondering if you would be interested in helping with a school project. You will be asked to listen to a potential radio commercial regarding energy conservation and then answer a few questions concerning it. Participation will only take about 10 minutes.”
When you reach this section, please notify the researcher that approached you. She or he will play a sales pitch advocating solar panels through a set of headphones, please listen carefully because it will only be played once...

...after you have listened to the sales pitch, please go on to the next page and complete the rest of the survey.
APPENDIX E

DEMOGRAPHICS

Directions: Please answer the following questions to the best of your ability. Remember there are no correct answers and all responses will be kept anonymous.

1. Age _____ years old

2. Sex
   Male   Female

3. What is your ethnicity? (Check all that applies)
   _____ White/Non-Hispanic
   _____ Black/African-American
   _____ Hispanic/Latino
   _____ Asian-American
   _____ Native American
   _____ Other _________ (specify)

4. Please indicate your highest level of education:
   _____ Some high school or below
   _____ High school graduate or GED
   _____ Some College or an Associates degree
   _____ Bachelor’s degree
   _____ Some graduate courses
   _____ Master’s degree
   _____ Advanced degree (Ed.D., Ph.D., J.D., M.D., etc.)

5. Were you born in the United States of America?
   Yes   No

6. Is English your native language?
   Yes   No

7. Are you a U.S. citizen?
   Yes   No   I would rather not respond

8. Please indicate the position below that best describes your political orientation.
   Very Liberal   Liberal   Moderate   Conservative   Very Conservative
   Liberal   Moderate   Conservative
   None/
   Don’t know
APPENDIX F

NEED FOR COGNITION SCALE

Directions: Please read each item carefully and circle how much you agree with it using the following scale. Remember there are no correct answers and that all responses will be kept anonymous.

1. I would prefer complex to simple problems.

1 extremely uncharacteristic of you
2 somewhat uncharacteristic
3 uncertain
4 somewhat characteristic
5 extremely characteristic of you

2. I like to have the responsibility of handling a situation that requires a lot of thinking.

1 extremely uncharacteristic of you
2 somewhat uncharacteristic
3 uncertain
4 somewhat characteristic
5 extremely characteristic of you

3. Thinking is not my idea of fun.

1 extremely uncharacteristic of you
2 somewhat uncharacteristic
3 uncertain
4 somewhat characteristic
5 extremely characteristic of you

4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.

1 extremely uncharacteristic of you
2 somewhat uncharacteristic
3 uncertain
4 somewhat characteristic
5 extremely characteristic of you

5. I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something.

1 extremely uncharacteristic of you
2 somewhat uncharacteristic
3 uncertain
4 somewhat characteristic
5 extremely characteristic of you
6. I find satisfaction in deliberating hard and for long hours.

   1 extremely
   2 somewhat
   3 uncertain
   4 somewhat
   5 extremely

   uncharacteristic of
   uncharacteristic
   uncharacteristic
   characteristic
   characteristic
   of
   you
   you

7. I only think as hard as I have to.

   1 extremely
   2 somewhat
   3 uncertain
   4 somewhat
   5 extremely

   uncharacteristic of
   uncharacteristic
   uncharacteristic
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   characteristic
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   you
   you

8. I prefer to think about small, daily projects to long-term ones.

   1 extremely
   2 somewhat
   3 uncertain
   4 somewhat
   5 extremely

   uncharacteristic of
   uncharacteristic
   uncharacteristic
   characteristic
   characteristic
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9. I like tasks that require little thought once I’ve learned them.

   1 extremely
   2 somewhat
   3 uncertain
   4 somewhat
   5 extremely

   uncharacteristic of
   uncharacteristic
   uncharacteristic
   characteristic
   characteristic
   of
   you
   you

10. The idea of relying on thought to make my way to the top appeals to me.

    1 extremely
    2 somewhat
    3 uncertain
    4 somewhat
    5 extremely

    uncharacteristic of
    uncharacteristic
    uncharacteristic
    characteristic
    characteristic
    of
    you
    you

11. I really enjoy a task that involves coming up with new solutions to problems.

    1 extremely
    2 somewhat
    3 uncertain
    4 somewhat
    5 extremely

    uncharacteristic of
    uncharacteristic
    uncharacteristic
    characteristic
    characteristic
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12. Learning new ways to think doesn’t excite me very much.

    1 extremely
    2 somewhat
    3 uncertain
    4 somewhat
    5 extremely

    uncharacteristic of
    uncharacteristic
    uncharacteristic
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    characteristic
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13. I prefer my life to be filled with puzzles that I must solve.

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14. The notion of thinking abstractly is appealing to me.

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15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.

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16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort.

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17. It’s enough for me that something gets the job done; I don’t care how or why it works.

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<td></td>
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</tbody>
</table>

18. I usually end up deliberating about issues even when they do not affect me personally.

<table>
<thead>
<tr>
<th></th>
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<th>2</th>
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</thead>
<tbody>
<tr>
<td>extremely</td>
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</tr>
<tr>
<td>somewhat</td>
<td></td>
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</tr>
<tr>
<td>uncertain</td>
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</tr>
<tr>
<td>somewhat</td>
<td></td>
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<tr>
<td>characteristic</td>
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<tr>
<td>characteristic of</td>
<td></td>
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<tr>
<td>you</td>
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</tbody>
</table>
## APPENDIX G

### WILLINGNESS TO BUY

**Willingness to Buy**

How likely would you be willing to buy solar panels after hearing this sales pitch?

<table>
<thead>
<tr>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not very likely</td>
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<td></td>
<td>Very likely</td>
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</tbody>
</table>


APPENDIX H

MESSAGE EVALUATION

Directions: Please read each item carefully and indicate the answer you feel best suits. Remember there are no correct answers and all responses will be kept anonymous.

1. To what extent do you believe the sales pitch made its point effectively?
   1 2 3 4 5 6 7 8 9
   Not at all Completely

2. To what extent did you like the sales pitch?
   1 2 3 4 5 6 7 8 9
   Not at all Very much

3. To what extent do you feel the sales pitch was convincing?
   1 2 3 4 5 6 7 8 9
   Not at all Very Convincing

4. Considering both content and style, how clear was the sales pitch?
   1 2 3 4 5 6 7 8 9
   Not very clear Very clear
APPENDIX I

ATTITUDE INDEX

**Directions:** Please indicate your feelings about the usage of Solar Panels.
**Remember** there are no correct answers and all responses will be kept anonymous.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<td>9</td>
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<td>4</td>
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<td>9</td>
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<tr>
<td>Unfavorable</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
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<td>Good</td>
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<tr>
<td>Beneficial</td>
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<tr>
<td>Favorable</td>
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</table>
**APPENDIX J**

**SUPPLEMENTARY MEASURES**

**Directions:** Please read each item carefully and circle only one answer.

**Remember** there are no correct answers and all responses will be kept anonymous.

### Argument Quality
1. The quality of the arguments for solar panels were...

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<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very weak arguments</td>
<td>Very strong arguments</td>
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</table>

### Perceived Distraction
1. I felt distracted while listening to the radio commercial...

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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not very distracted</td>
<td>Very distracted</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

2. There were distractions in the surrounding area while I was completing this survey

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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not true at all</td>
<td>Very true</td>
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</tbody>
</table>

### Current Mood
1. My current mood is...

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<tr>
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<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sad</td>
<td>Happy</td>
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<td></td>
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</tbody>
</table>

2. As of right now I am feeling...

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<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressed</td>
<td>Elated</td>
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<td></td>
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</tbody>
</table>