The Effect of Language Proficiency on Second-language Lie Detection

by

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Abstract

I examined whether observers' own language proficiencies would affect their lie detection judgments. In a previous study, native- and second-language English speakers were videotaped as they either lied or told the truth about having cheated on a test (Da Silva & Leach, 2013). A total of 284 undergraduate students viewed the videos and were asked to indicate whether they believed that the individuals were being truthful or deceptive. Observers performed better when judging native-language speakers than second-language speakers. Furthermore, observers' own language proficiencies had an effect on bias: as the proficiency of observers decreased, they were more likely to judge speakers as truth-tellers. However, there was no effect of language proficiency on discrimination. These findings may inform law enforcement hiring practices. In addition, they suggest that the use of interpreters in legal processes may be essential. Implications of these findings will be further discussed.

Keywords: deception detection, second-language speakers, discrimination, bias

Dedication

This thesis is dedicated to my family and friends. Thank you for believing in me and supporting me in anything I choose to do.

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I would like to thank Dr. Amy-May Leach for all of her help and support over the past few years. I wholeheartedly believe that I could not have completed this degree without your support and encouragement. I would also like to say a special thank you to Mariane Gazaille, my research contact at the Université du Québec à Trois-Rivières, for her help in coordinating and allowing me to visit UQTR on four separate week-long research trips. And lastly, thank you also to my family and friends, my best friends Katherine Bouchard and Valérie Léveillé, for supporting me and helping me keep it together and stay sane.

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Chapter 1

The Effect of Language Proficiency on Second-language Lie Detection

With increases in international travel and immigration, individuals do not always have the opportunity to communicate with law enforcement officials, such as customs officials or police officers, in their native languages. What is of interest to lie detection researchers is the effect that this inability to communicate in one's native language has on observers' abilities to accurately detect deception. Are individuals speaking in second languages more likely to be judged as deceptive than those speaking in their native languages? Past research has found that observers do tend to exhibit a lie bias toward second-language speakers (Da Silva & Leach, 2013). What remains unknown is whether an observer's own language proficiency will affect his or her judgments of deception. In this study, I examined this issue.

Lying Behavior

Researchers have examined lying in everyday life (Camden et al., 1984; DePaulo, Kashy, Kirkendol, Wyer & Epstein, 1996). In a study conducted by DePaulo and Kashy (1998), participants were asked to keep diaries of their lying behavior during social interactions every day for one week. Findings indicated that individuals lied one to two times a day about their feelings, opinions and preferences. In a similar study conducted by DePaulo, Lindsay, Malone, Muhlenbruck, Charlton and Cooper (2003), participants tended to lie for a variety of reasons, including material gain and personal convenience. In some instances, individuals were also found to lie to escape punishment; however, these lies were not always successful.

Why Lies Might Fail

There are many reasons why a lie might fail. Facts that contradict a lie may be exposed or a lie may be revealed as such by a third party (Ekman & O'Sullivan, 1991). However, this information may not always be available. As a result, the success or failure of a lie may depend solely on the lie-teller's verbal and nonverbal behaviors. When judging the deception and truthfulness of an individual, there are two types of errors that may occur. A false positive occurs when an individual who is being truthful is incorrectly judged to be lying and a false negative occurs when a deceptive individual is incorrectly judged to be telling the truth. In the criminal justice system, false positives and false negatives can lead to serious consequences.

Cues Associated with Deception

Observers' beliefs about deception are most often inaccurate. Previous studies have demonstrated that most of the nonverbal cues that people associate with deception - such as increases in head and body movements, smiling and fidgeting (e.g., self-manipulation) are not reliable (e.g., Akehurst, Kohnken, Vrij & Bull, 1996). There is also the belief that particular verbal cues are indicative of deception (e.g., pauses, hesitations; DePaulo et al., 2003; Mann, Vrij & Bull, 2004). However, these cues have not been found to be reliably associated with deception either (DePaulo et al., 2003). Another common mistake that observers make is that they are incorrect about the relationship between the cues and deception. For example, people believe that head movements and self-manipulations will increase during deception (Akehurst et al., 1996). In fact, these behaviors are affected by deception; however, they have actually been found to decrease when individuals are lying (DePaulo, Charlton, Cooper, Lindsay, & Muhlenbruck, 1997).

Given that people often hold incorrect beliefs about the cues associated with deception, one must question whether their lie detection judgments are accurate.

Accuracy

Studies that have examined lie detection accuracy have not yielded promising results. Laypeople's accuracy is around fifty-four percent, which is near chance levels (Bond & DePaulo, 2006). Also, researchers have found that law enforcement officials are often no better than laypeople at detecting deceit (e.g., DePaulo & Pfeifer, 1986; Kohnken, 1987). For example, Kraut and Poe (1980) found that customs officials had accuracy rates that were comparable to those of laypeople. Furthermore, the officials' levels of experience did not have an impact on their accuracy. These findings are particularly worrisome because interviewing techniques that are used by law enforcement officials (e.g., the Reid Technique) assume that officers can correctly identify when an individual is being truthful or deceptive (Inbau, Reid, Buckley & Jayne, 2001; Memon, Vrij & Bull, 2003).

Accuracy and Confidence

Researchers have also examined whether one's confidence in judgments of deception is correlated with accuracy (DePaulo et al., 1997). To examine the accuracy-confidence correlation, lie detection researchers may ask participants to indicate their confidence in each decision or their confidence in their overall abilities to detect deceit. In their meta-analysis, DePaulo et al., (1997) found that observers' confidence was positively correlated with their tendency to judge messages as truthful. Observers also reported being more confident in their decisions when judging truths versus lies.

However, confidence was not significantly correlated with accuracy (DePaulo et al., 1997).

Instead, observers appeared to exhibit overconfidence (DePaulo et al., 1997). Decades of research have identified an overconfidence effect in cognitive psychology, indicating that observers can feel more confident in their abilities than their actual competencies warrant (Fischoff, Slovic & Lichtenstein, 1977; Koriat, Lichtenstein & Fischoff, 1980). Typically, this overconfidence effect is present when tasks are moderately or very difficult (Koriat et al., 1980). Detecting deception is a very difficult task; recall that accuracy rates are only slightly better than chance (Bond & DePaulo, 2006). In fact, the overconfidence effect has been found in deception detection research (Kassin, Leo, Meissner, Richman, Colwell, Leach & La Fon, 2007). Observers may report feeling quite confident in their decisions because they are giving more weight to verbal and nonverbal cues that have little to no predictive validity (DePaulo et al., 1997). It is unclear, however, what impact this may have on second-language lie detection.

Second-language Lie Detection

The question of interviewing a suspect in his or her native or second language has received some attention with respect to polygraph testing (Caldwell-Harris & Dinn, 2008). In 2002, American law enforcement officials administered a polygraph test to a Spanish speaker who was accused of killing an American woman. The test was administered with the use of an interpreter. The accused successfully passed the polygraph in English, but police officers decided to re-administer the test in Spanish (Caldwell-Harris & Dinn, 2008). It is unknown why law enforcement officials re-

administered the test; however, in doing so, they seemed to acknowledge that it may have been problematic to interview the suspect in his second language.

Cheng and Broadhurst (2005) first examined the effect of speaking in a first vs. second language on lie detection ability. Researchers found that observers performed similarly when viewing individuals who were speaking in their native or second languages. However, the researchers used an opinion paradigm, in which participants were asked to lie about strong beliefs that they held with regard to a particular issue. Generally, this scenario does not result in high stakes lies. Ekman (1996) maintains that high stakes lies are needed to arouse the emotions that are difficult to conceal, disrupt an individual's cognitive processes and, ultimately, betray a lie. Also, Cheng and Broadhurst (2005) allowed participants to code switch. That is, participants in the second-language condition were allowed to alternate between speaking their native and second languages. Allowing participants to switch to their stronger native language may have reduced their cognitive load.

Evans, Michael, Meissner and Brandon (2013) did not permit code-switching in their examination of the effects of language proficiency on lie detection accuracy. Observers were asked to watch videos of individuals providing true or false alibis while speaking in their native or second languages. They found that observers were more accurate when judging truth-tellers than lie-tellers, and were more accurate when judging deception in second-language (vs. native) speakers.

Using a high stakes paradigm, Da Silva and Leach (2013) also studied the effects of language on implicit lie detection. In their study, laypeople were asked to watch videos of individuals who were either lying or telling the truth about whether or not they had

cheated on a test, in their native or second languages. Observers were less accurate when judging second-language speakers than native-language speakers. In addition, they exhibited a truth bias toward native-language speakers (i.e., native-language speakers were more likely to be judged as telling the truth) and a lie bias toward second-language speakers.

In a follow-up study, Leach and Da Silva (2013) examined police officers' abilities to detect deception in second-language speakers. Findings were similar to those found among laypeople, in that officers were better able to detect deception in native-language speakers than second-language speakers. They also tended to believe that native speakers were telling the truth. Contrary to what the researchers had hypothesized, officers' expertise did not aid their lie detection abilities.

Reasons for Bias

There is a reason why different response biases were found toward native- and second-language speakers. When speaking in a second language, individuals must inhibit neural control mechanisms that would automatically have them respond in their native languages (Wang, Xue, Chen, Xue & Dong, 2007). Because of their increase in cognitive load, second-language speakers may display cues that are associated with deception, making them look like lie-tellers. The nonverbal cues most often believed to be associated with lying include increases in cues of composure, such as nervousness, head or body movements and self-manipulation (i.e., fidgeting; DePaulo et al., 2003). These behaviors are often exhibited by second-language speakers simply when they are communicating (Gregersen, 2005). Second-language speakers may provide less detailed accounts (Cheng & Broadhurst, 2005); lie-tellers also exhibit this behavior (DePaulo et

al., 2003). Individuals might misattribute the normal aspects of second-language speech to lying, which could explain why researchers have consistently found that individuals exhibit a truth bias towards native speakers but not second-language speakers. It is unknown whether familiarity with second-language speakers' behaviors would aid the detection of their deception.

Familiarity and Lie Detection Accuracy

Perhaps non-native speakers are more likely to understand and appreciate the difficulty of speaking in one's second language than unilingual English speakers. Past research has found a somewhat inconsistent pattern of effects of familiarity on lie detection accuracy (e.g., Comadena, 1982; Feeley, de Turck & Young, 1995; McCormick & Parks, 1986; Reinhard, Sporer & Sharmach, 2013). Feeley et al. (1995) noted that the highest accuracy rates were found with moderate levels of familiarity between lie-tellers and observers in terms of their relationships. In fact, an inverted U function was best in describing the relationship between familiarity and lie detection accuracy. Deception detection judgments were least accurate with low and high levels of familiarity and most accurate with moderate levels of familiarity.

Conversely, a study conducted by Reinhard et al. (2013) found that familiarity with a situation substantially increased observers' lie detection accuracy. Researchers asked participants to judge true and false statements in which individuals were discussing a driving test that they had or had not yet taken. In the high-familiarity condition, the driving test allegedly took place in observers' hometowns. Researchers found that observers in the high-familiarity condition were more accurate in judging deception. They explained that when an individual felt familiar with a situation, they were more

likely to rely on the verbal content that was presented and to expect to make an accurate judgment than an individual who felt unfamiliar with a situation. This is an interesting finding as researchers assert that verbal cues are, in fact, more diagnostic of deception than non-verbal cues (Vrij, 2004). Regardless of the pattern of effects, it is fair to assume that familiarity is associated with detection accuracy. However, it is unknown whether this generalizes to language proficiency. In the present study, I examined this issue.

Chapter 2

The Present Research

I examined whether observers' own language proficiencies affected their judgments of second-language speakers' deception. Participants watched videos of individuals who were lying or telling the truth about having cheated on a test. Individuals in the videos were speaking to an experimenter in either their first or second languages. In order to determine proficiency, observers completed language proficiency tasks modeled after those used by the Centre for Canadian Language Benchmarks (Centre for Canadian Language Benchmarks, 2010).

Hypotheses

Discrimination. I hypothesized that observers would be better able to discriminate between lies and truths when judging native-language speakers than when judging second-language speakers, similar to previous findings (Da Silva & Leach, 2013). In addition, I expected that observers' own language proficiencies (i.e., familiarity with speakers' behaviors) would affect their judgments of second-language speakers. That is, observers with lower levels of language proficiency would be better able to discriminate between lies and truths than observers with higher language proficiencies. However, I expected that the opposite would occur when observers viewed native-language speakers.

Bias. Overall, when observers judge native-language speakers, they display a truth bias (Bond & DePaulo, 2006). However, observers can exhibit a lie bias when judging second-language speakers (Da Silva & Leach, 2013). I hypothesized that the same would occur in this study. I also hypothesized that observers' own language

proficiencies would affect bias in this condition. When viewing second-language speakers, lie bias should have been lowest in low proficiency observers. Observers who spoke a second language were expected to identify with second-language speakers, be familiar with their verbal and nonverbal behaviors, and attribute their behaviors to proficiency issues rather than lying.

Confidence. As found in previous research, I expected that observers would report feeling more confident when judging native-language speakers than when judging second-language speakers (Da Silva & Leach, 2013). Thus, in this study, I expected that higher proficiency observers' confidence would be lowest when judging second-language speakers and highest when they judged native-language speakers.

Method

Participants

A total of 284 undergraduate students (187 females and 97 males) participated in this study. The mean age was 23.30 years (*SD* = 5.48). With regard to race, 4 participants were Aboriginal, 5 were Arab, 59 were Black, 2 were Chinese, 1 was Filipino, 3 were Spanish, 1 was Japanese, 2 were Latino-American, 3 were South Asian, 1 was South East Asian, 192 were White, and 8 self-identified as 'Other'. Native English speakers were recruited at UOIT and received extra credit for their participation. Bilingual, Francophone participants, whose English-language proficiencies ranged from basic to advanced, were recruited from the Université du Québec à Trois-Rivières. Bilingual Francophone participants were given twenty dollars for their participation.

Research Design

This research study involved a mixed-factors design. The independent variables examined in this study were Observer Proficiency (ranging from Basic English to Native English), Speaker Language (native vs. second language) and Veracity (lie vs. truth), with the last factor being within-participants. The dependent variables were observer bias, discrimination, and confidence.

Materials

Video Footage. The video footage that was used was gathered during another study (Da Silva & Leach, 2013). Researchers modified Russano, Meissner, Narchet & Kassin's (2005) cheating paradigm. Individuals were placed in a room with a female confederate who enticed them to cheat on a logic test (or not). An experimenter, who was blind to condition, then confronted individuals about having the same wrong answer on a particular question. The experimenter asked to speak to each participant individually and led the confederate out of the room. Then, the experimenter proceeded to ask individuals a series of questions about whether they had cheated on the test. Each individual was asked the following: "What do you think the problem is?"; "I left the room. I was gone for fifteen minutes. Can you describe everything that happened from the minute I left until I returned?"; "Can you be more specific? I really need to know what happened."; "Did you ask the other student (her) for help?"; "Did she ask you for help?"; "Did you share answers?"; "What do you think I should do about this?"

The entire exchange between experimenter and individual was captured using a hidden camera. The positioning of the camera allowed for individuals' upper torsos and faces to be visible throughout the session. In total, clips of 20 truth-tellers and 10 lie-

tellers being interrogated were compiled (*M* length per clip = 92.73 seconds, *SD* = 32.17). Fifteen video clips were of native English speakers who had been recruited from an Introductory Psychology course. The remaining fifteen clips featured second-language speakers who had been recruited from the English as a Second Language learning center on the UOIT campus. These individuals' English-language proficiencies were assessed by the ESL center using standardized measures (i.e., a written placement test). These individuals were classified as "Beginners."

The clips were randomly ordered. In each Speaker Language condition (Native language vs. Second Language); clips were presented in one of two randomized orders. Specifically, there were four possible versions of the videos: Native Language Order A, Native Language Order B and Second Language Order A and Second Language Order B.

Lie Detection Judgments. After viewing each video, participants had to indicate whether they believed that the individual in the video was lying or telling the truth. They indicated their answers on paper by circling Lie or Truth. They were also asked to rate their confidence in their decisions on a scale from 0 (not at all confident) to 100 (extremely confident).

Demographics. Participants provided information about themselves by completing a demographics questionnaire (see Appendix A). Furthermore, they were asked to discuss their lie detection experience. Specifically, they were asked to respond "yes" or "no" to the following questions: "Have you ever taken a course in lie detection?"; "Have you ever participated in a study that involved lie detection?"; "Have you ever worked in law enforcement?"

Participants also indicated their proficiencies in different languages. For example, they were asked to rate their English language proficiency on a five-point scale, from 1 (Poor) to 5 (Excellent). Also, they were asked for the following information: "Please list all of the languages that you speak, including your native language."; "At what age did you start learning each language?";"What language(s) do you consider your native (or first) language(s)?"; "What language(s) do you speak at home?"; "What language did you learn first?"; "How many years have you been speaking English?" Participants estimated how often they communicated in each language using an eight-point scale, from 1 (Daily) to 8 (Less than once or twice a year) and indicated how often they interacted with people who were speaking in their second language, from 1 (Never) to 5 (Always). Finally, participants were asked to rate their reading, writing, speaking, and listening proficiencies for each language on a ten-point scale, from 1 (Not at all [proficient]) to 10 (Very [proficient]).

Language Assessment Tasks. Participants were required to complete four language proficiency tasks (see Appendix B). These tasks were modeled after those used by the Centre for Canadian Language Benchmarks (2010). To calculate each participant's overall proficiency, scores for each task were transformed into *z* scores. Then, I averaged these *z* scores.

In the written comprehension task, participants read a passage about a request for a reference or about an upcoming anniversary. They were asked to answer three simple multiple-choice questions (e.g., "What is the purpose of this text?"). Participants were given a score of zero, one, two or three, based on the number of correct answers that they

selected. Participants were given a four when they identified as unilingual English speakers.

The second task required participants to write a detailed description of one of two images, which allowed me to examine writing proficiency. The black and white images were taken from the Thematic Apperception Test (Murray, 1943; see Appendix C). The first image depicted a man lying on a bed. A woman was standing at the door to the room holding the doorknob and with her hand over her face. The second image showed the countryside with a man working the field with a horse and a woman leaning on a tree in the background. In the foreground, a woman was holding books. The images were open to interpretation and displayed a large amount of detail, allowing participants to provide a full description. Written descriptions were given a score of one (basic), two (intermediate) or three (advanced), using the criteria established by the Centre for Canadian Language Benchmarks (2010). If descriptions were written in French, observers did not receive a score. Observers were given a score of four when they identified themselves as unilingual English speakers. All descriptions were evaluated by a primary coder and secondary coder to ensure inter-rater reliability. Analyses indicated a moderate level of agreement ($k = .682$, $p < .001$).

The third task was used to assess listening ability. Participants were required to listen to an audiotape of a passage being read in English. One version described the flu vaccine and its potential side-effects, whereas the other was a message provided to visitors of a park. Again, participants had to answer three multiple-choice questions about what they heard (e.g., “What is the main purpose of this message?”). Similar to Task 1, observers were given a score of zero, one, two, or three, based on the number of correct

answers that they selected. If participants identified themselves as unilingual, they were given a score of four.

Finally, for the fourth task, participants were shown the remaining Thematic Apperception Test image and asked to provide a verbal description of what they saw. Participants' voices were recorded using a webcam and coded to allow me to determine oral language proficiency. Overall proficiency was evaluated using the Centre for Canadian Language Benchmarks criteria (2010). If participants were not able to describe the image in English and, thus, described the image in French, they were not given a score. Participants who identified as unilingual English speakers were given a score of four. Both a primary and secondary coder evaluated all of the audio recordings and assigned a score of one (basic), two (intermediate) or three (advanced). There was a good level of agreement ($k = .704$, $p < 001$).

Procedure

Participants were greeted by an experimenter and directed to take a seat in a classroom. The number of participants in the room varied based on the number of people who signed up for a particular timeslot. However, participants were instructed to work independently from one another. Participants were randomly assigned to watch videos of either native-language speakers or second-language speakers. The videos were projected on a screen by MediaLab (Jarvis, 2006), a research software program. After viewing each video, participants indicated whether they believed that the individual was lying or telling the truth, and to rate their confidence in their decision. Once participants had viewed all of the videos, they were asked to complete the language proficiency tasks. Then, they

were asked to fill out the demographics questionnaire. Finally, participants were fully debriefed. Each session lasted approximately one hour.

Results

I conducted a series of hierarchical multiple regressions. Preliminary analyses ensured that there were no violations of the assumptions of normality, linearity, multicollinearity and homoscedasticity for any of the analyses. I also included gender as a variable in my preliminary analyses; however, as there were no significant effects, all reported analyses were collapsed across gender.

Lie Detection Accuracy

In order to determine observer accuracy, I coded correct and incorrect judgments. Correct judgments (e.g., when observers watched a truth-teller video and judged the target as a truth-teller) were coded as one. Incorrect judgments (e.g., when observers watched a truth-teller video but judged the target as a lie-teller) were coded as zero. I then calculated the mean accuracy score for each observer. Accuracy scores ranged from a minimum of .13 to a maximum of .93 (M = .54, SD = .16)

Hierarchical multiple regression was used to assess the ability of two variables (Language of Targets and Proficiency of Observers) to predict observer accuracy rates. Language of Targets and Proficiency of Observers were entered at Step 1, which explained 23.7% of the total variance in the model. After entering the interaction term (Language of Targets x Proficiency of Observers) into the model at Step 2, the total variance explained by the model as a whole remained 23.7%, $F(3, 280) = 29.01$, $p < .001$. Thus, the addition of the interaction between Language of Targets and Proficiency of Observers did not explain any of the variance in the model. In the final model, only

Language of Targets was significant (*beta* = -.481, $p < .001$). Observers were more accurate when judging native-language speakers ($M = .62$, $SD = .13$) than when judging second-language speakers ($M = .45$, $SD = .15$); see *Table* 1).

Furthermore, using one-sample *t*-tests, I compared accuracy to chance (.50). When judging native-language speakers, observers performed significantly better than chance, $t(141) = .619$, $p < .001$. They performed significantly below chance when judging second-language speakers, $t(141) = .467$, $p = 009$.

Signal Detection

Signal detection theory was used to examine observers' abilities to discriminate between lies and truths, and observer bias. Signal detection theory holds that when decisions are made, they are influenced by an observer's reaction to a stimulus as well as his or her own internal response (Green & Swets, 1966). Meissner and Kassin (2002) explain that signal detection theory provides a framework where one's performance can be separated into two different parameters: discrimination and response bias. Discrimination is described as an observer's ability to correctly detect a signal (i.e., deception) and correctly reject its absence (i.e., truth). Response bias is the degree of evidence that is necessary for an observer to report that a signal (i.e., deception) has, in fact, been presented. I aimed to further examine overall accuracy to determine whether observers' scores were due to their abilities to correctly discriminate between lies and truths (i.e., correctly detect or reject a signal), or their own bias (i.e., decision to always select one answer over another).

Discrimination. In order to examine the ability of Language of Targets and Proficiency of Observers to predict observers' discrimination between lies and truths (i.e.,

d'), hierarchical multiple regression was used. Language of Targets and Proficiency of Observers were entered first; the total variance explained by the model as a whole was 18.1%. After entering the interaction between Language of Targets and Proficiency of Observers, 18.9% of the total variance was explained, $F(3, 280) = 21.74$, $p < .001$. The addition of the interaction term explained an additional .8% of the variance, but it was not statistically significant. Language of Targets was the only significant factor in the final model (*beta* = -.423, $p < .001$). Observers were better able to discriminate between lies and truths when judging native-language speakers ($M = .48$, $SD = .51$) than second-language speakers ($M = -.03$, $SD = .58$; see *Table 1*).

Using one-sample *t*-tests, I examined observers' abilities to discriminate between lies and truths by comparing their d' values to zero, where zero is indicative of no ability. Observers were able to discriminate between lie- and truth-telling native-language speakers, $t(141) = .476$, $p < .001$, but not second-language speakers, $t(141) = -.030$, $p = .536$.

Bias. I used a hierarchical multiple regression to assess the ability of Language of Targets and Proficiency of Observers to predict observers' biases (i.e., β). The two independent variables were entered at Step 1; they explained 4% of the total variance. After subsequently entering the interaction term, the total variance explained by the model was 4.1%, $F(3, 280) = 3.96$, $p = .008$. Although the addition of the interaction between Language of Targets and Proficiency of Observers accounted for an additional 0.1% of the variance, it was not statistically significant. In the final model, only Proficiency of Observers was significant (*beta* = -.192, $p = .001$). Observers with lower levels of proficiency were more likely to judge targets as truth-tellers.

In addition, I used one-sample *t*-tests to compare observers' β values to one (where one is indicative of no bias). Observers exhibited a truth bias when judging native-language speakers ($M = 1.09$, $SD = .404$), $t(141) = 1.09$, $p = .007$, and second-language speakers ($M = 1.13$, $SD = .353$), $t(141) = 1.13$, $p < .001$ (see *Table 1*).

Lie Detection Confidence. I also used hierarchical multiple regression to assess the ability of the independent variables to predict observers' confidence in their lie detection judgments. When Language of Targets and Proficiency of Observers were entered, they explained 2% of the variance. After adding the interaction term at Step 2, the total variance explained by the model as a whole was 2.1%, $F(3, 238) = 1.95$, $p = .121$. The addition of the interaction term to the model did not result in statistically significant findings. In the final model, only Proficiency of Observers was significant (*beta* = .123, $p = .039$). Observers with higher levels of proficiency reported higher levels of confidence than observers with lower proficiencies.

Chapter 3

Discussion

I examined whether observers' own language proficiencies affected their lie detection judgments and biases. Findings were consistent with previous lie detection research (Bond & DePaulo, 2006); observers' accuracy rates remained around chance. In terms of discrimination, observers were more accurate when judging the lies and truths of native-language speakers than second-language speakers. Observers exhibited a truth bias toward native-language speakers and second-language speakers. Findings indicated that observers' own language proficiencies had very little impact on their lie detection decisions.

With regard to discrimination, as I hypothesized, observers were better able to discriminate between lies and truths when judging native-language speakers than second-language speakers. This finding is consistent with previous research (Da Silva & Leach, 2013). Contrary to my prediction, observers' language proficiencies had no effect on their abilities to discriminate between second-language speakers' lies and truths. These findings suggest that familiarity with the behavior of second-language speakers and their struggle to speak in their second language was not beneficial. Reinhard et al., (2013) did find that familiarity increased lie detection accuracy due to a reliance on verbal content rather than behavior. Perhaps native observers performed poorly because they relied on second-language speakers' behavior, which was misleading. Second-language observers may have relied on the verbal cues of second-language speakers. However, we know that second-language speakers provide less verbal information (Cheng & Broadhurst, 2005). Therefore, second-language observers may have performed poorly because they were

relying on limited verbal information. Furthermore, although one would assume that speaking a second-language suggests familiarity, observers may not have been in tune with their own behaviors or recognized the behavior of second-language speakers. This suggests that familiarity with an individual on a recurring or more personal level, rather than familiarity with ones' own behaviors, has an effect on lie detection accuracy.

I also hypothesized that - when viewing second-language speakers - observers with higher proficiencies would exhibit a greater lie bias than observers with lower proficiencies. This hypothesis was not supported. I found that observers with lower levels of proficiency were more likely to judge targets as truth-tellers overall, regardless of the speakers' proficiencies. It is unclear why this occurred. Furthermore, I hypothesized that observers would exhibit a truth bias when judging native-language speakers and exhibit a lie bias when judging second-language speakers. This hypothesis was partially supported. Observers exhibited a truth bias when judging both native and second-language speakers. Previous research has consistently found a truth bias toward native-language speakers (Bond & DePaulo, 2006; Leach & Da Silva, 2013). Bond and DePaulo (2006) note that individuals, in their daily interactions, tend to accept most statements without much reflection. Perhaps this is why I found a truth bias toward native-language speakers. The majority of observers in my study spoke a second language themselves, which may have eliminated any biases towards the second-language targets. In addition, Bond and Atoum (2000) found that there was no general tendency among observers to judge foreigners as deceptive and in fact, observers judged foreigners to be more truthful. They noted that observers might give second-language speakers the benefit of the doubt and are reluctant to judge them as deceptive.

In terms of confidence, I hypothesized that observers would report feeling more confident when judging native-language speakers than when judging second-language speakers. This hypothesis was not supported. Previous research found that observers were more confident when judging native-language speakers than second-language speakers (Da Silva & Leach, 2013). It is unclear why this finding was not replicated. Da Silva and Leach (2013) suggested that their observers were unfamiliar with the behavior of second-language speakers. However, in the present study, the majority of observers spoke two languages. Although there was no effect of observers' own language proficiencies on accuracy, their perceptions of familiarity with second-language speakers may have affected their confidence ratings. Another unexpected finding was that observers with high proficiency reported higher levels of confidence. One reason for this finding may be that observers with high proficiency were more familiar with the language spoken in the videos (English).

Limitations and Directions for Future Research

Limitations of this study suggest directions for future research. One limitation is that second-language speakers in the videos came from a variety of backgrounds. Second- and native-language targets were matched for age, race, and gender. However, it is possible that participants had difficulty understanding second-language targets, as none were native French speakers and they displayed heavy accents when speaking in English. Lev-Ari and Keysar (2010) examined the influence of accents on the credibility of statements. They found that participants were more likely to judge statements spoken by non-native speakers as less truthful than statements spoken by native speakers. The majority of observers in my study spoke only French and English. Anecdotal evidence

suggests that the second-language observers may have had difficulty understanding targets' (non-French) accents and may have been just as unfamiliar with the accents displayed in the videos as the native-language observers. Therefore, results may not accurately reflect the effect of familiarity on lie detection. It would be beneficial for future researchers to examine whether familiarity with a particular accent or a particular pattern of speech would affect lie detection judgments.

It would also be beneficial for future researchers to examine how race, accent and language proficiency interact. We matched native and non-native speakers in terms of race. However, it is likely that the language proficiency of an individual in a given country is closely related to his or her race (i.e., a Caucasian individual in Japan is less likely to be a native speaker of Japanese). It is unknown how this relationship would affect discrimination and bias. Also, the interaction between accent and language proficiency could be further examined. To date, the effects of targets' accents and language proficiencies have not been examined independently. It is possible for an individual to be very proficient and express themselves well in his or her second language, and yet still speak with an accent. It would be interesting to examine how targets' accents (versus targets' language proficiencies) would impact the lie detection judgments of observers.

Researchers should also use multiple measures when evaluating observers' language proficiencies. Observers in this study completed one language proficiency task for each competency (i.e., reading comprehension, writing ability, listening ability and speaking ability). If the language tasks were too easy or too difficult to complete, participant language proficiency scores may have been skewed. For example, when

examining observers' performance on the individual language proficiency tasks, the majority of observers received a high score on the reading comprehension task. In turn, the easiness of the task might have artificially inflated proficiency and masked proficiency effects. Using multiple measures to determine language proficiency could eliminate this alternative explanation for the results.

Implications

As the Office of the Commissioner of Official Languages (2005) indicates, individuals do not always have the opportunity to speak to law enforcement officials in their native languages. Officers who speak a variety of different languages are simply not available. My findings suggest that having an interviewer who speaks a second language themselves, and who may understand the difficulties associated with speaking in one's second language, is not effective in eliminating differences in accuracy. I would suggest that law enforcement agencies' hiring practices reflect the need for officials who speak several different languages so that interviewees can communicate in their native languages during interviews and interrogations. Making changes to hiring practices would be especially important for border services agencies, where officials interact with second-language speakers on a daily basis. Changes could reduce the likelihood that an individual is incorrectly judged as a lie-teller and face serious legal consequences. I would also suggest that law enforcement agencies ensure that interpreters are used by officers. Researchers have examined the use of interpreters during police interrogations, in the courtroom and other legal settings (e.g., Berk-Seligson, 2000; Pöllabauer, 2002). Interpreters might eliminate the comprehension difficulties between suspects and officers and other actors in the legal system.

Chapter 4

Conclusions

I examined the effects of observer language proficiency on lie detection judgments. Observers were more accurate when judging native-language speakers than second-language speakers. Observers' own language proficiencies did have an effect on bias, but not discrimination. These findings suggest that the hiring practices of law enforcement agencies should reflect the need for individuals who speak a variety of different languages. Alternatively, trained professional interpreters could be used in legal proceedings. Given the implications for law enforcement agencies, further research is needed.

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Table 1

Table of overall means

	Native-Language		Second-Language	
	Mean	*SD*	Mean	*SD*
Accuracy	.62	.13	.45	.15
Discrimination	.48	.51	-.03	.58
Bias	1.09	.404	1.13	.353

Appendix A

Demographics Questionnaire

Please provide the following information:

1. What is your gender? Male Female

2. Age: _____ years

3. Race (check the one that *most* describes you):
   - _____ Aboriginal (Inuit, Métis, North American Indian)
   - _____ Arab/ West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan)
   - _____ Black (e.g., African, Haitian, Jamaican, Somali)
   - _____ Chinese
   - _____ Filipino
   - _____ Hispanic
   - _____ Japanese
   - _____ Korean
   - _____ Latin American
   - _____ South Asian
   - _____ South East Asian
   - _____ White (Caucasian)
   - _____ Other _____

4. What language(s) do you consider your native (or first) language (s)?_____

5. What language(s) do you speak at home?
_____

6. What is your English language proficiency?

Poor				Excellent
1	2	3	4	5

7. What is your French language proficiency?

Poor				Excellent
1	2	3	4	5

8. For how many years have you spoken English? _____

9. Please list all of the languages that you speak (including your native language):

Language 1: _____ Language 3: _____
Language 2: _____ Language 4: _____

(a) At what age did you start learning each language?

Language 1: _____ Language 3: _____
Language 2: _____ Language 4: _____

(b) Estimate how often you communicate in each language:

(1 = daily; 2 = several days a week; 3 = weekly; 4 = bi-weekly; 5 = monthly; 6 = every few months; 7 = once or twice a year; 8 = less than once or twice a year)
Language 1: _____ Language 3: _____
Language 2: _____ Language 4: _____

(c) For each language, please rate your reading proficiency: 1 (not literate) to 10 (very literate):

Language 1: _____ Language 3: _____
Language 2: _____ Language 4: _____

(d) For each language, please rate your writing proficiency: 1 (not literate) to 10 (very literate):

Language 1: _____ Language 3: _____
Language 2: _____ Language 4: _____

(e) For each language, please rate your speaking ability: 1 (not fluent) to 10 (very fluent):

Language 1: _____ Language 3: _____
Language 2: _____ Language 4: _____

(f) For each language, please rate your listening ability: 1 (unable to understand conversation) to 10 (perfectly able to understand):

Language 1: _____ Language 3: _____
Language 2: _____ Language 4: _____

10. Please indicate how often you interact with people who are speaking in their second language.

Never	Rarely	Often	Usually	Always
1	2	3	4	5

11. Have you ever taken a course which involved lie detection?

Yes_____ No _____

If yes, please explain: _____
_____

12. Have you ever participated in a study that involved lie detection?

Yes _____ No _____

If yes, please explain: _____
_____

13. Have you ever worked in last enforcement?

Yes _____ No _____

If yes, please explain: _____
_____

14. Please rate your confidence in your ability to detect deception:

Not at all Confident	A little Confident	Average Confident	Somewhat Confident	Very Confident
1	2	3	4	5

15. Please rate your experience in lie detection:

Not at all Experienced	A little Experienced	Average Experienced	Somewhat Experienced	Very Experienced
1	2	3	4	5

Appendix B

Language Tasks

Task 1

Please answer the questions based on the passage that you read on the screen. Circle the *best* answer.

1) What is the main purpose of this message?

a) Request a favour
b) To begin planning a party
c) To make an invitation
d) To describe the party

2) What is going to happen in June?

a) An anniversary
b) A birthday
c) A visit
d) A graduation

3) In the last sentence of the passage, Janet asks Mary to:

a) Purchase the food
b) Make a telephone call
c) Choose the location
d) Inform the guests

Task 2

Please write a detailed description in English of the picture displayed. Provide details and describe the picture as you would to someone who has never seen it before.

Task 3

Please answer the questions based on the passage that you heard in the audio clip. Circle the *best* answer.

1) What is the purpose of this text?

a) To amuse and entertain
b) To warn and caution
c) To announce and inform
d) To praise and encourage

2) According to the passage, what is a common belief about the flu shot?

a) It leads to complications
b) It works for two years
c) It is painful
d) It is sometimes unsafe

3) What does the passage state about the flu shot?

a) It sometimes causes the flu
b) It protects against all strains
c) It minimizes cold symptoms
d) It is not made from live virus

Task 4

For this task, I will show you a picture and ask you to give a verbal description in English which will be audio recorded. So I will hold up a picture and please describe it in detail; and describe it as you would to someone who has never seen it.

Appendix C

Thematic Apperception Test Images