

FEELINGS ARE HARD:  
COGNITIVE COMPLEXITY'S EFFECT ON  
CROSS-LINGUISTIC EMOTIONAL IDENTIFICATION

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by

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## **DEDICATION**

To my mother and father:

Now, four years after I've graduated high school, my life is nothing like I thought it would be. That isn't to say my life is bad; it's just different. I think we can all agree we used to firmly believe that by this age I would be acting and that my turn toward academic research was a surprise. Although my venture through college has been seemingly easy, you both know how untrue that is. So, I would like to thank you two for always supporting me through the years of frustration, hurt, and occasional tears I have experienced. Thank you also for sharing in my successes and joys.

I know I never thank you enough. How could I?

## ACKNOWLEDGEMENTS

I'd like to begin by stating that I am not always a man of many words and, no matter how much I write about each of the following individuals, there is so much more that I want to say and simply cannot express it.

Completing this project has been an absolute gift. It's one of those things that is so incredibly difficult throughout the process, but in hindsight fills me immense pride. That retrospect is a result of the unending support I have received throughout my four years at Texas State University and the silent influence of a number of persons.

First, I'd like to thank my advisor: Dr. Marian Houser. She is the absolute most incredible instructor I have ever had the pleasure of working with. I've never been lucky enough to be a student in one of her classes, but having her as a mentor in so many facets has been fulfilling in and of itself. She is an inspiration to me academically and personally. I've never known anyone else who can bring energy into a room like she can. Seriously, she can take the drabest of situations and make it the most exciting events of the century.

Second, I'd like to thank my Chinese instructor: Dr. Patricia Schiaffini-Vedani. She is objectively one of the nicest people I've ever met and also one of the smartest. More impressively, she is both these things and carries herself with an impressive amount of modesty. She is the kind of person who cares mostly about others and seldom about herself. I benefited from this because she poured hours of attention into helping me improve my skills in Mandarin Chinese. She will never understand how much that means to me. I repressed my own Chinese culture as a child and regretted it beyond belief. Thank you for letting me explore that part of myself.

Lastly, I'd like to thank a number of instructors who have made a huge impact on me: Kristen LeBlanc Farris for fostering my interest in research and putting up with me, Dr. Michael Burns for finding me opportunity to grow at every turn, Dr. Debra Monroe for teaching me to love to read at the age of 20. Amanda Walker for showing me how much I love statistics, and finally Mrs. Diann McCabe for fostering my relationship with the Honors College at Texas State University.

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Description</b>
RCQ	Role Category Questionnaire
IRB	Institutional Research Board
SH	Sad to Happy
AC	Angry to Content
FFFL	Fearful to Fearless
CC	Cognitive Complexity

## **ABSTRACT**

Inspired by the circumstances of social globalization, this study assesses the possible correlation between the communication measure cognitive complexity and a person's ability to accurately identify emotions without the use of verbal messages. Cognitive complexity has been linked to a better understanding of affective messages and therefore could indicate higher emotional intelligence. Emotional identification exists as a factor of emotional intelligence since it deals with the accurate interpretation of emotional messages. Results were analyzed using correlation tests and indicated that there is most likely only a weak correlation between cognitive complexity and the ability to identify whether or not a person is angry. Additional ANOVA tests did indicate, however, that there are significant differences between gender identity and level of cognitive complexity. Ultimately findings revealed that, with this sample, there appears to be little correlation between degree of cognitive complexity and an individual's cross-linguistic emotional identification ability. Further, these results can inform future studies to explore the relationship between cognitive complexity and identification of anger, or the possible phenomenon that the 18-24 age group suffers from an inability to accurately identify emotions.

## 1. INTRODUCTION

Technology has revolutionized communication in the 21<sup>st</sup> Century by making instantaneous transmission of information a possibility. Using powerful computing machines that range in size from desktop computers to smartphones in the palms of our hands, people can learn about cultures and current events in countries thousands of miles from their own locations. This advancement of information-communication technologies guides the general perception of the world's communication as a more globalized social-network (Bojanić & Budimir, 2011). Depending on whom you ask, this inevitable social globalization may be a step toward global harmony or the beginning of a feared global entropy. However, globalization in a social context is nothing to be feared. In fact, social globalization is considered by some scholars (e.g. Bojanić & Budimir, 2011) to be a normal stage in the progression of human communication. Thus, the logic follows that cross-cultural and cross-linguistic understanding (used interchangeably) are valuable skills needed to adapt to a contemporary spirit and to embrace the future of communication.

Unfortunately, because Western practices and perspectives have found their way into many of the world's nations, it is easy for a person who is a part of Western Culture to become complacent to the idea that Western Culture is worldwide; in fact, this is not true. It is only generally accepted that Europe, the Americas, and Australia practice what is considered to be Western Culture. This mindset does not reflect the need for cross-cultural understanding caused by globalization. Instead, members of Western Cultures should be acknowledging and actively trying to bridge cultural gaps. Intercultural scholar Agnieszka Juzefovič believes that Far East Culture contrasts so heavily from Western

Culture that a Westerner (used from here-on to refer to a member of Western Culture) could never view a Far Easterner (used from here-on to refer to a member of Far East Culture) as anything but exotic (2009). From a Westerner's perspective, and in the spirit of globalization, this is one gap that should be bridged.

However, achieving a true social globalization would imply that members of two different cultures could communicate interpersonally. This is, by nature, microscopic rather than macroscopic in that it examines the relationship between two people and not entire societies. It would involve, for example, a Westerner to encounter and effectively communicate messages to a Far Easterner and vice versa. Sadly, communication between varied cultures is often inhibited because of pre-existing language barriers. The use of language translation can assist in some cross-cultural communication contexts, but within a direct and spontaneous interpersonal situation this is not always a readily available asset. Therefore, when considering how to bridge the communicative gap between cultures and acknowledging the language barrier, one should turn toward non-verbal communication. Non-verbal communication, theoretically, could be used by members of different cultures to communicate, as it has been a valuable form of communication prior to the existence of verbal language (Darwin, 1872/1998; Parr, Waller, & Fugate, 2005; Masson & McCarthy, 1996). In addition, comprehension of these messages has been tied to enhanced communication competency in an environment or culture with which one is unfamiliar (Buck, 1984; Elfenbein & Ambady, 2002). Furthermore, research supports the idea that important interpersonal messages, such as those associated with feelings and emotions, are most often delivered through non-verbal channels (Buck, 1984). Thus,

assessing the identification of affective messages is effective for examining cross-cultural non-verbal message comprehension.

Of course, it is unlikely that every individual can comprehend messages relating to emotion at an equal level, so the question of what makes a person effective in performing such an act is posed. Past research has assessed the effect that culture, age, gender, and upbringing have on a person's emotional comprehension or emotional identification ability (Ekman, Friesen, O'Sullivan & Chan, 1987; Nowicki & Duke, 1994; McClure, 2000). However, the aforementioned research overlooks the possibility that the skill of emotional comprehension can be affected by individual personality factors. It is possible a correlation exists between personality factors and emotional comprehension ability. For example, anecdotally, when two close acquaintances were shown a video – an emotional commercial produced in Thailand – the two observers had entirely different reactions (Mandato, personal communication, 2013; Able, personal communication, 2014). As the two observers were of the same gender, racial background and general age range as well as members of Western society with similar social influences, it seems plausible that a unique trait beyond simple demographics (e.g. gender, age, culture, upbringing, or social class) might impact their differential abilities to comprehend the same emotional messages. Thus, the following question is posed: What trait, beyond simple demographics, could affect a person's emotional comprehension ability?

First, when attempting to determine a trait that may affect the ability of emotional comprehension, researchers must consider the attributes of such a trait. As a researcher of communication, it would be natural to consider factors of personality - factors that affect a person's thought-processes and behavior. Additionally, since communication norms

vary between cultures, intercultural emotional comprehension would require the subject to understand another culture's perspective. Therefore, any trait that may impact emotional comprehension of another culture likely also affects a person's ability to process varied perspectives. Cognitive complexity, a communication construct that is associated with a person's ability to view interpersonal interactions from multiple perspectives, would fit both of these criterion as it is both concerned with thought-processes and an indicator of an individual's degree of broad-mindedness. Thus, the present study will investigate the potential relationship between cognitive complexity and the ability of cross-cultural emotional comprehension.

## **2. LITERATURE REVIEW**

### **Cognitive Complexity**

The idea of cognitive complexity was initially introduced by Bieri (1955) as a psychological theory that uses the tendencies of an individual's conceptual organization as a predictor for behavior. In other words, the degree of simplicity in organization of ideas would be indicative of psychological simplicity. In 1965, constructivist researcher Crockett expanded Bieri's ideas to include the ability to contrast conceptual ideas (differentiation) and the ability to imagine conceptual ideas as having function (integration). Constructivist theories of cognitive complexity are typically linked to interpersonal communication and a person's ability to develop constructs that describe other people and explain their communicative behavior. An individual with high cognitive complexity is known to be capable of creating both a larger variety of and more plentiful constructs to describe interpersonal communication (Crockett, 1965; Delia & Crockett, 1973; Kelley, 1963). Because of this fact, individuals with higher levels of

cognitive complexity are capable of more effective communication than those who exhibit lower levels of cognitive complexity (Burlison & Caplan, 1998). Generally, past research has identified cognitive complexity as affecting multiple interpersonal process in a variety of relational contexts such as romantic partners, classmates, or close friendships (Burlison, Kunkel, & Szolwinskia, 1997; Clark & Delia, 1977).

The accepted measure for cognitive complexity has been Corckett's Two-Part Role Category Questionnaire (RCQ) (Crocket, 1965). Respondents are asked to reflect on a person they like and another person they dislike. Then, the respondents record descriptions of these two people. Following this, a series of coding rules, created by Burlison and Waltman, are used to determine which descriptors are considered appropriate and indicate a person's ability to create varied interpersonal constructs (1988). For example, since cognitive complexity is intended to measure a person's ability to describe communication behaviors, one rule indicates that physical attributes (e.g. "pretty eyes") and societal roles (e.g. "student") are not to be scored.

In order to expand on previous research of cognitive complexity, the current study considers the existing link between high levels of cognitive complexity and increased perspective-taking flexibility (Hale & Delia, 1976). Being capable of viewing the world from more than one perspective has often been tied to effective communication because an individual can better manage conflict by approaching the problem from multiple perspectives. In addition, these individuals have a tendency to better adapt their messages based on their ability to be broad-minded (Ling, 1996). With this knowledge under consideration, the current study addresses the possibility that cognitive complexity may affect cross-cultural communication. This assumption was based on that idea that the

ability to adapt messages may be beneficial for being an effective cross-cultural communicator since communication norms vary from culture to culture. Thus, it was worthwhile to study cognitively complexity and its effect on cross-cultural communication.

### **Emotional Comprehension**

The skill of emotional comprehension (a.k.a. emotional identification) is a person's ability to identify the emotions another person is experiencing: in order to engage effectively in social interaction, this skill is essential (Banse & Scherer, 1996; Pittam & Scherer, 1993; Scherer, 2003). Expression of emotion does not occur through a single medium, but rather through a multitude of media. Emotion can be manifested verbally with direct statements about feeling (e.g., "That makes me sad"), or through a wide variety of non-verbal channels. A non-verbal message can, for instance, be conveyed via facial expressions (e.g. frowning when sad), body language (e.g. crossing arms when angry), rate of speech (e.g. speaking faster when scared), intensity of speech (e.g. speaking softly when upset), etc. There are also non-verbal expressions that are exclusive to indicating expression of emotion, such as laughter or tears (Sauter, Eisner, Calder, & Scott, 2010; Scott, Sauter, & McGettigan, 2010). An individual's ability to decode the channel-rich messages that are emotions is heavily reliant on the understanding of communicative norms (Carpendale & Lewis, 2006; Chiat & Roy, 2008). Thus, it has been proven valuable for any individual to engage in regular face-to-face communication to develop the skill of emotional comprehension (Caron, Caron, & Myers, 1982).

Generally, studies of emotional comprehension abilities have focused on the causal relationship that age, gender, culture, and upbringing have with effective emotional identification (Ekman, Friesen, O'Sullivan & Chan, 1987; Nowicki & Duke, 1994; McClure, 2000). Additionally, these studies have remained intra-cultural under the assumption that non-verbal affective messages do not vary cross-culturally.

Unfortunately, this does not address the impending communicative role in social globalization.

Social globalization has become an increasingly realistic phenomenon because of the use of information technology to send instantaneous messages across the globe. In order to adapt to a socially globalized world, it is important to find effective methods for intercultural communication. Language barriers will always exist. Therefore, verbal communication must be eliminated from focus; instead, attention should be on the examination of cross-cultural, non-verbal communication. The argument has been made that emotions are vital messages to human communication and are often delivered through a variety of non-verbal channels. Furthermore, understanding non-verbal cues may be linked to greater social understanding of another culture. Thus, to gain knowledge on the topic of adapting to inevitable social globalization, it is worthwhile to examine cross-cultural emotional comprehension.

### **Cognitive Complexity Links to Emotional Comprehension**

As the present study attempts to assess a person's emotional comprehension ability, it is important that cognitive complexity be linked to the ability of emotional identification. According to past research (e.g. O'Keefe & Delia, 1985), people who are more cognitively complex have been associated with using more person-centered

messages when engaging in interpersonal communication. Additionally, person-centered messages are linked to an awareness of various relational aspects; most importantly for this study, person-centered messages indicate an understanding of affective aspects of communication (Delia, 1987; O'Keefe & Delia 1982). Therefore, if a cognitively complex person tends to use person-centered messages that demonstrate a cognizance of affective aspects of communication, then a cognitively complex person should be able to more accurately identify emotions. Thus, it was important to validate - or invalidate - this claim in order to aid scholarly understanding of what kind of person can better understand another culture's non-verbal communication. With this in mind, the following question was posed:

**RQ 1:** Is there a significant correlation between a Westerner's degree of cognitive complexity and his/her ability to identify Far Eastern emotions through non-verbal messages?

### **3. METHODS**

In order to effectively execute an experiment that determines a link between cognitive complexity and cross-cultural emotional comprehension ability, the process was composed of two parts: a pre-test manipulation and the actual administration of the experiment. In each part of the methods section, these two components are addressed.

#### **Participants**

**Pre-test manipulation.** For this step, the sampling method was a convenience sample in which the researcher performed the procedures with a graduate Communication Studies class ( $N = 16$ ) from a large Southern university. The demographics of this sample were not taken as preparatory steps and did not require

representative sampling since they were designed to simply create consistency for the actual administration.

**Administration.** For the actual administration of the surveys, participants were collected using a convenience sample in which several students in communication classes at a large Southern university were asked to complete the processes in exchange for extra-credit ( $N = 68$ ). Of these participants, approximately 69% were female. In addition, 50% of participants identified as white, 31% identified as Hispanic or Latino, 9% identified as Black or African American, 6% identified as two or more races, 3% identified as “Other”, and 1% identified as Asian or Pacific Islander. Nearly all participants were in the 18-24 age group, with the exception of seven individuals (approx. 10%) in the 25-34 age group.

### **Materials**

For the current study, two videos were screened. The first video (from here on to be called Video 1) was a commercial created by a Thai insurance company. This video depicts a generous man building relationships throughout his city. The second video (from here on to be called Video 2) was also an advertisement created by the same Thai insurance company. This video depicts a young boy who leaves school early to help his mother work as a street sweeper. Both videos can be found on YouTube™, however the present study used versions where the subtitles were removed by the researcher.

**Rationale.** In an effort to determine how best to assess the ability of cross-cultural emotional comprehension – the ability to identify emotions presented in a cultural context that is no one’s own – the problem of finding a reasonable and cost-effective manner arises. It is neither reasonable nor inexpensive to transplant Westerners into a location of

Far East Culture or vice versa, thus scholars are confronted with the challenge of bringing the culture to the participant. Films, movies, and videos – despite being cloaked in the ruse of acting – are believed by scholars to be an accurate depiction of the culture in which the production was executed (Gunning, 2002). This can be especially true for non-verbal messages embedded within the films, as the actors often naturally portray the non-verbal messages prevalent within the specific culture. Thus, for the purpose of this study, it will be worthwhile to examine a video to assess understanding of another culture's non-verbal communication.

### **Procedures**

Prior to administration of any step in the current study, an application was first submitted for review to the university's institutional review board (IRB) and approval was granted prior to data collection. Per IRB standards, participants were asked to provide written consent (Appendix A) after being advised of the potential discomforts the study might have evoke, namely the RCQ requirement of writing about someone whom they dislike. If participants were not comfortable, they were allowed to withdraw from participation and if the participant became uncomfortable during the experiment they had the right to stop participating at any time. The participants were also be informed that the survey results would remain anonymous. After consent was confirmed, the participants began their respective processes depending on which step of the study in which they had agreed to participate in.

**Pre-test manipulation scenario.** The participants were *taught* the pre-selected terms for the presented emotions in Video 1. For the purpose of this study, the pre-selected terms used were: happy, angry and fearful, along with their alternatives: sad,

content, and not-fearful respectively. In order to teach the pre-selected terms, the video was stopped at pre-selected points and the participants were told which of the previously mentioned emotions was present at that moment and to what intensity the emotion existed. Afterwards, the same participants were shown Video 2 and, at the pre-selected stopping points of Video 2, were asked to determine which emotion was present and to what degree each was presented on a 5-point semantic differential spectrum (e.g. 1 – Very Sad, 2 – Sad, 3 – Neutral, 4 – Happy, 5 – Very Happy; see Appendix C).

**Administration scenario: Measures.** In this portion, the participants were asked to complete 3 steps. First, they were asked to respond to demographic questions (Appendix B). This information was gathered because there may have been a more prominent correlation with one of these demographics if no correlation was discovered between cognitive complexity and cross-cultural emotional comprehension. The demographics requested were: age, sex, gender-identification, and race. Participants were also asked whether they had knowledge of the Thai language and about their familiarity with Far East culture. After completing the short demographic section, the participants were asked to complete the Role Category Questionnaire (RCQ; see Instruments/Appendix D) used to measure their cognitive complexity.

The final part of the study's administration examined cross-cultural emotional identification using Video 2 with pre-selected stopping points where the participants were asked to identify the expressed emotion on a semantic differential scale with a 5-point spectrum and the choices happy, angry, fearful or sad, content, and not-fearful respectively (See Appendix C). This data was compared to the results of the pre-test to determine who had accurately identified the emotions.

## **Instruments**

**Cognitive Complexity: The Role Category Questionnaire (RCQ).** Created by Crockett, the RCQ is the generally accepted measure for the construct of cognitive complexity (1965; see Appendix D). This questionnaire asked the participants to consider two people (one they like and one they dislike) and to create some method of identification for these people without actually indicating who they are (i.e. initials, or a symbol). A moment was granted for the participant to mentally compare these two people. Then, the participants received 5-minutes per person to describe that person as wholly as they could in terms of personality, behavioral traits, etc. These were scored after the last part of the administration and compared to the information constructivist scholar Jessie Delia contributed to a textbook that most college students RCQ scores range between 15-25 with a mean of 20; to have above 25 would indicate exceptional cognitive complexity and to have below 15 would indicate low cognitive complexity (Griffin, 2012).

## **4. RESULTS**

### **Pre-test Results**

The purpose of the outcome data on emotional intensity during the pre-test was to determine the most consistent emotions identified throughout Video 2 when there was an understanding of what the pre-selected emotions are supposed to look like. Figure 1 below reveals the distribution for emotional identification. Each group of graphs represents one stopping point and each individual histogram represents an emotional category (i.e. Sad to Happy - SH).

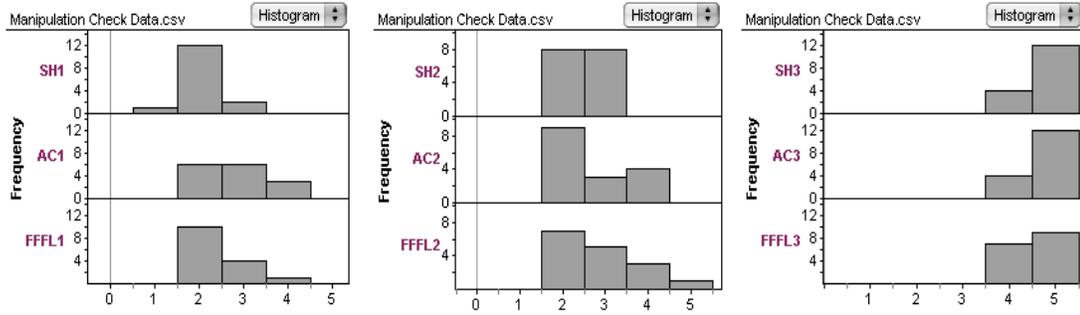


Figure 1. Distribution of pre-test emotional identification. Each cluster of graphs represents a stopping point; each individual graph represents a single emotional identification scale.

Since the sample size was small, likelihood of perfectly normal distribution was low, however answers remained fairly similar with very little variation. Thus, it was not unreasonable to utilize the means from this sample as a comparison for the data during the administration phase. Table 1 presents the means for all stopping points' respective emotional categories.

Table 1

*Pre-test  $\mu$  for emotional identification*

Stopping Point 1		Stopping Point 2		Stopping Point 3	
SH1	2.06667	SH2	2.5	SH3	4.75
AC1	2.8	AC2	2.6875	AC3	4.75
FFFL1	2.4	FFFL2	2.875	FFFL3	4.5625

### Administration Results

**Distribution of data.** Figure 2 and Table 2 represent the distribution of cognitive complexity scores for the participants. With the exception of a few outliers, the data is normally distributed indicating that it can, for the most part, be a representative sample.

Furthermore, the distribution of the quartiles reflects past research which suggests that most college students' cognitive complexity scores fall somewhere between 15-25.

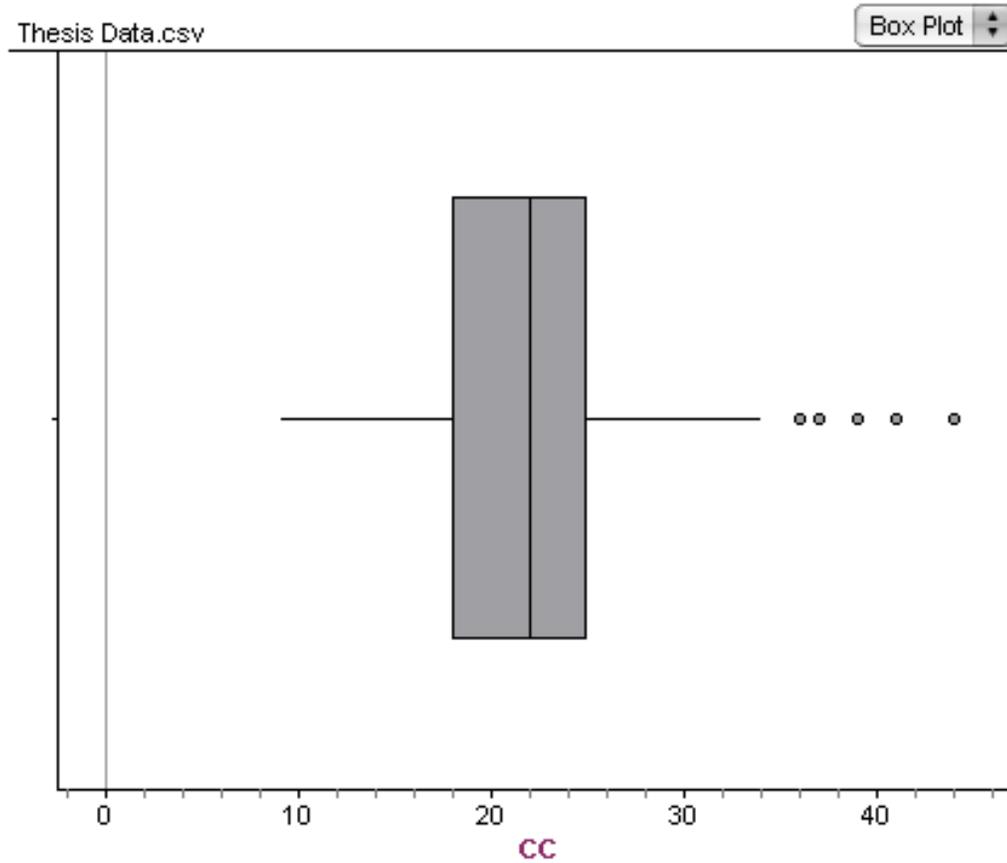


Figure 2. Distribution of cognitive complexity scores.

Table 2

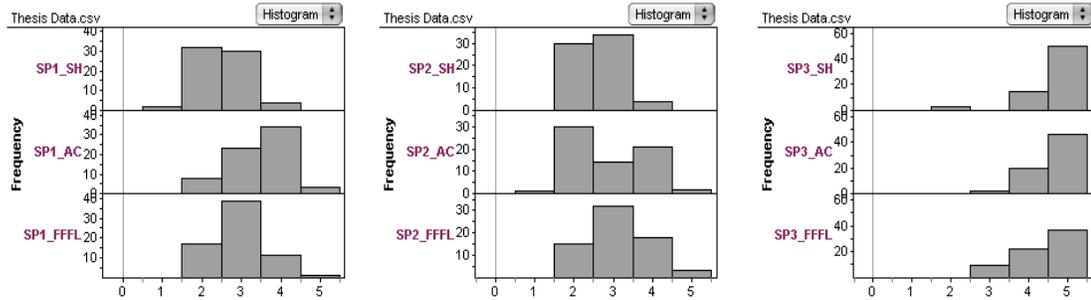
*Important figures for the distribution of cognitive complexity scores.*

$\mu$	$\sigma$	min	Q1	med	Q3	max
22.75	7.60081	9	18	22	25	44

Figure 3 indicates the distribution of emotional identification for the participants. When compared to the distribution for the pre-test participants, there is greater variation but still very consistent distribution shapes. This variation could be explained by either

the increased size of sample or by the fact that the participants were not taught how to identify emotions. Regardless, all stopping points indicate fairly normal distributions.

Thus, assumptions for using correlation testing and ANOVA testing were met.



*Figure 3.* Distribution of emotional identification. Each cluster of graphs represents a stopping point; each individual graph represents a single emotional identification scale.

**Analysis of correlation.** In order to address RQ 1, correlation graphs were created to visually determine if there was any correlation between level of cognitive complexity and ability to accurately identify emotions. Accurate emotional identification was measured by using the absolute value of the difference between each individual’s response and the respective mean from the pre-test. Therefore, in order for the idea that high cognitive complexity indicates more accurate emotional identification to be true, there would need to be a negative correlation between cognitive complexity and emotional identification difference. Four correlation graphs were created (Figure 4) to determine not only if there was correlation between cognitive complexity and general emotional identification, but also to assess the possibility of a correlation between cognitive complexity and each of the three individual emotional categories. The graphs indicate almost no correlation among categories. In general, each scatterplot appears to be somewhat random. Interestingly, even though the values appear to be randomly

distributed, almost all graphs (with the exception of differences for SH identification) were fit with positive least squares regression lines. This would indicate that as cognitive complexity increases, ability to identify cross-cultural emotions without the understanding of the language decreases.

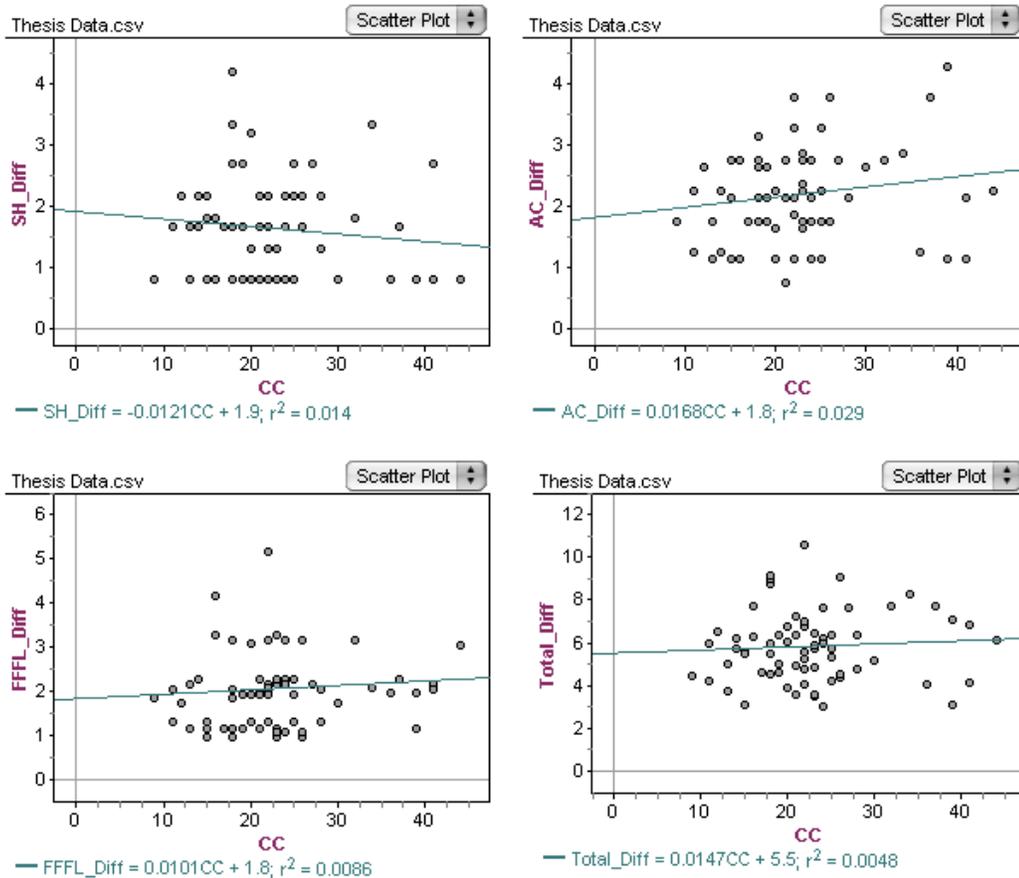


Figure 4. Correlation graphs. Emotional identification difference explained by cognitive complexity.

Since the coefficient of determination ( $r^2$ ) is highest for the correlation between cognitive complexity and difference for Anger/Content (AC\_Diff) – indicating that the least squares regression line is best fitting for this graph – further testing was used to determine statistical significance. Table 3 displays the results of a correlation test for a positive relationship between cognitive complexity and difference of AC identification.

Table 3

*Correlation test for cognitive complexity and AC identification difference*

Count	<i>r</i>	<i>t</i>	<i>DF</i>	<i>p</i>
68	0.168955	1.393	66	0.084

The *p*-value indicates that there is an 8.4% probability that this correlation was a result of chance. Based on the typically accepted confidence level for communication research ( $\alpha = .05$ ), this is not significant. However, some studies will utilize a confidence level of  $\alpha = 0.1$  and, by these standards, the statistics are significant. Regardless, the correlation is weak at best with a correlation coefficient (*r*) of about 0.169.

Table 4

*One-Way Analysis of Variance of SH difference by CC quartile*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	3	2.5639	0.8546	1.449	0.2370
Within groups	64	37.7581	0.5900		
Total	67	40.3220			

Table 5

*One-Way Analysis of Variance of AC difference by CC quartile*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	3	1.6431	0.5477	0.961	0.4166
Within groups	64	36.4712	0.5699		
Total	67	38.1143			

Table 6

*One-Way Analysis of Variance of FFFL difference by CC quartile*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	3	0.2329	0.0776	0.109	0.9544
Within groups	64	45.4626	0.7104		
Total	67	45.6955			

Table 7

*One-Way Analysis of Variance of Total difference by CC quartile*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	3	2.620	0.8732	0.326	0.8069
Within groups	64	171.673	2.6824		
Total	67	174.293			

In a secondary attempt to address RQ1, the scores for cognitive complexity were separated into four quartiles based on their distribution. The quartiles were then used to run ANOVA tests (Tables 4-7) for each emotional category to determine if variance existed between degrees of cognitive complexity. Likewise, all ANOVA tests revealed non-significant results. This could indicate that cognitive complexity has no effect on cross-cultural emotional identification. It could also indicate that, when combined with the information from the CC/AC correlation tests, it could indicate that the differences between cognitive complexity and emotional identification are so subtle that it cannot be detected across quartiles.

**Additional testing.** As the present study collected various demographic information, some post-hoc research questions were investigated in order to discover other possible significant results:

**RQ 2:** Are there significant relationships between gender, race, or familiarity with Far East culture and the ability to identify Far Eastern emotions through non-verbal messages?

**RQ 3:** Are there significant relationships between gender, or race and degree of cognitive complexity?

ANOVA tests were used and no significant findings were discovered between any demographic (gender, race, or familiarity with Far East culture) and emotional identification ability regardless of emotional category. ANOVA tests for race/cognitive complexity and familiarity of Far East culture/cognitive complexity also revealed no significance. However, Table 8 shows a comparing of means *t*-test for gender and cognitive complexity and does reveal significant differences. These results indicate that, with over 99% confidence, those who identify as female tend to have significantly higher cognitive complexity than those who identify as male. Confidence intervals were then created to estimate each gender identity's cognitive complexity score. According to these intervals, individuals who identify as male are likely to score somewhere between 16 and 20 points on the RCQ while individuals who identify as female are likely to score between 22 and 27. Both of these intervals were constructed with 95% confidence and rounded to indicate more realistic scoring.

Table 8

*t-test for differences in cognitive complexity by gender*

<i>t</i>	<i>DF</i>	<i>p</i>
4.492	65.6949	< 0.0001

## 5. CONCLUSIONS

Although statistical analysis did not offer a direct answer to the proposed research question, assumptions can be made based on the findings to make light of the results. Based on the statistical results revealed, the present study suggests three possible explanations for the lack of relationships between cognitive complexity and cross-cultural emotional identification: true lack of correlation, a generational phenomenon, or design flaw. This section will cover those three explanations respectively and go on to suggest possible directions for future research for the context of cross-cultural communication.

**Lack of correlation.** Since the experiment results exhibited little to no correlation between cognitive complexity and cross-linguistic emotional identification, the most obvious explanation for this would be truly no correlation. One implication of this is that previous research analyzing the relationship between cognitive complexity and emotional intelligence may be somewhat unreliable, although that seems unlikely since this research has been repeatedly re-tested. Another implication is that, while cognitive complexity may correlate with emotional intelligence in a familiar culture and language, this is not the case when interpersonal partners are from different cultures or speak different languages. Perhaps there is some unknown factor at play that renders an individual incapable of fully understanding the emotions of another person if they do not understand

their speech. Most logically, this is a result of the decreased channel richness created with the loss of verbal messages of an interpersonal partner. Along with the loss of channel richness comes a lack of complete context which plays an important role in communication understanding as a whole. Regardless, this explanation is rooted in the idea that cognitive complexity was not the appropriate construct for this context, and thus was the cause of non-significant findings.

**Generational phenomenon.** The second explanation focuses on the sample collected for this experiment and most specifically the age group. Since all correlation tests and additional testing reported no differences, the data reveals that the sample as a whole identifies emotions in the same way or randomly. This would suggest that some grouping factor for the sample may be the cause of emotional identification ability. The participants were, however, not all too similar. Their gender and race varied reasonably and so neither of these demographics is likely to be the cause. Although, as previously stated, 61 of the 68 participants identified themselves in the 18-24 age group, making the sample mostly representative of the Millennial generation. Therefore, some correlation may exist between age and emotional identification ability causing the entire sample's data to be too similar for statistically significant differences amongst other demographic groupings. Since this experiment's procedures relied heavily on the understanding of non-verbal messages, perhaps Millennials have lost touch with the ability to effectively read and interpret non-verbal messages.

**Experimental design flaws.** The last of the three explanations is the flaw in experimental procedures. First, since the procedures required roughly 30-minutes for completion, participants completed the experiment in small groups. For some, this could

have created a bias as they could have looked at the responses of other participants for the emotional identification survey. If that were the case, some responses would not have accurately reflected emotional identification abilities that are influenced by cognitive complexity. Another problem may have been the use of a 5-point semantic differential scale. This did not permit for large enough differences amongst participants, thus forcing many of the scores for emotional identification to be similar and decreasing the likelihood of detecting correlation with cognitive complexity. A 7-point or even 9-point semantic differential would have been more conducive to a correlation study. In addition, the method to determine accuracy of emotional identification was highly imperfect. Using the results of the pre-test as the “correct” identification of emotions was an approach that retrospectively may not have been ideal. Such a problem may actually be the result of another issue: participants had trouble identifying the emotions presented in Video 2. In the last stopping point, all participants revealed a general consensus because the emotion expressed by the actor was so obvious. However, in the first two stopping points participants struggled to interpret the emotions that the actor was exhibiting. Therefore, both the pre-test participants and main-study participants were likely inaccurate when trying to identify the actor’s emotions.

**Future research.** Despite the fact that the present study did not make any significant discoveries, there are a number of new pathways future studies could take. The most interesting point for future investigation is the positive trend that almost all emotional categories maintained in their correlation graphs with cognitive complexity. As previously discussed, this positive trend indicates that, as cognitive complexity increases, emotional identification abilities decrease. Such a study could also look further into the

possible correlation between cognitive complexity and the identification of anger, since it was the only emotional category to result in a statistically significant correlation.

The various explanations for lack of correlation presented by this study also imply some routes that new studies might take. As the first explanation in the present study's conclusion suggests, there may be another construct that is affecting cross-cultural emotional identification; another study should examine other constructs typically associated with emotional intelligence. The first explanation also suggests that inter-linguistic and intra-linguistic communication may hold such disparities that emotional identification becomes increasingly more difficult during inter-linguistic communication. Further study could also be conducted to assess these differences and to determine if the inclusion of verbal language, or even subtitles, significantly impacts emotional identification abilities. The second explanation suggests that the results may have been a phenomenon of the generation that was sampled. In order to determine the validity of this, a study could be done to compare the emotional identification abilities across generations.

## **APPENDIX SECTION**

### **Appendix A**

This consent form will give you the information you will need to understand why this research study is being done and why you are being invited to participate. It will also describe what you will need to do to participate as well as any known risks, inconveniences or discomforts that you may have while participating. We encourage you to ask questions at any time. If you decide to participate, you will be asked to sign this form and it will be a record of your agreement to participate. You will be given a copy of this form to keep.

#### **PURPOSE AND BACKGROUND**

You are invited to participate in a research study to learn more about the relationship between the communication measure cognitive complexity and cross-cultural emotional identification. The information gathered will be used to determine a possible correlation between these two variables through statistical analysis.

#### **PROCEDURES**

If you agree to be in this study, you will participate in the following:

- 1<sup>st</sup> procedure: A roughly 15-minute personality assessment
- 2<sup>nd</sup> procedure: A roughly 20-minute assessment which involves watching a short video and answering questions about your opinions on specific parts of the video

#### **RISKS/DISCOMFORTS**

This survey will ask for demographic information which, due to the make-up of Texas State University's population, may potentially make you identifiable even though the surveys are to be completed anonymously. Even though the analysis portion of this survey will eventually separate the demographics (ex: gender would be assessed separately than race) and the statistics will no longer have obvious ties after this re-organization of data, we will still do as much as possible to protect the identities of the participants.

In the unlikely event that some of the survey or interview questions make you uncomfortable or upset, you are always free to decline to answer or to stop your participation at any time. Should you feel discomfort after participating and you are a Texas State University student, you may contact the University Health Services for counseling services at 512-245-2208. They are located LBJ Student Center 5-4.1.

#### **BENEFITS/ALTERNATIVES**

Extra-credit for your respective course will be offered for completing these procedures – the value of this will be determined by your instructor. If you choose not to participate, your instructor will offer an alternative for extra-credit that will involve approximately the same amount of time/effort. In addition, the information that you provide will help researchers better understand how to communicate without the use of translation or when translation is not efficiently possible.

### **EXTENT OF CONFIDENTIALITY**

Reasonable efforts will be made to keep the personal information in your research record private and confidential. Any identifiable information obtained in connection with this study will remain confidential and will be disclosed only with your permission or as required by law. The members of the research team, and the Texas State University Office of Research Compliance (ORC) may access the data. The ORC monitors research studies to protect the rights and welfare of research participants.

Your name will not be used in any written reports or publications which result from this research. Data will be kept for three years (per federal regulations) after the study is completed and then destroyed.

### **PARTICIPATION IS VOLUNTARY**

You do not have to be in this study if you do not want to. You may also refuse to answer any questions you do not want to answer. If you volunteer to be in this study, you may withdraw from it at any time without consequences of any kind or loss of benefits to which you are otherwise entitled.

### **QUESTIONS**

If you have any questions or concerns about your participation in this study, you may contact the Principal Investigator, Channing Wan: (770) 238-9394 or [channingwan@txstate.edu](mailto:channingwan@txstate.edu)

This project 2017397 was approved by the Texas State IRB on February 16, 2017. Pertinent questions or concerns about the research, research participants' rights, and/or research-related injuries to participants should be directed to the IRB Chair, Dr. Jon Lasser 512-245-3413 – ([lasser@txstate.edu](mailto:lasser@txstate.edu)) or to Monica Gonzales, IRB Regulatory Manager 512-245-2314 - ([meg201@txstate.edu](mailto:meg201@txstate.edu)).

### **DOCUMENTATION OF CONSENT**

I have read this form and decided that I will participate in the project described above. Its general purposes, the particulars of involvement and possible risks have been explained to my satisfaction. I understand I can withdraw at any time.

## Appendix B

Please fill out the following information for demographics:

(This information will not be kept in a way so that you will be identifiable by your response)

- 1) Gender:
  - a. Male
  - b. Female
  - c. Other:
- 2) Race
  - a. White
  - b. Hispanic or Latino
  - c. Black or African American
  - d. Native American or American Indian
  - e. Asian/Pacific Island
  - f. Other:
- 3) Age
  - a. 18-24 years old
  - b. 25-34 years old
  - c. 35-44 years old
  - d. 45-54 years old
  - e. 55-64 years old
  - f. 65+ years old
- 4) Major/Minor:
- 5) Are you familiar with how to speak/write the Thai language?
  - a. Yes
  - b. No
- 6) How familiar do you feel you are with Far Eastern Culture?
  - a. Not familiar at all
  - b. A little familiar
  - c. Somewhat familiar

### Appendix C

**At the first stopping point, please select one point (1-5) on all of the three scales**

**below:**

1	2	3	4	5
Very Sad	Sad	Neutral	Happy	Very Happy

1	2	3	4	5
Very Angry	Angry	Neutral	Content	Very Content

1	2	3	4	5
Very Fearful	Fearful	Neutral	Fearless	Very Fearless

**At the second stopping point, please select one point (1-5) on all of the three scales**

**below:**

1	2	3	4	5
Very Sad	Sad	Neutral	Happy	Very Happy

1	2	3	4	5
Very Angry	Angry	Neutral	Content	Very Content

1	2	3	4	5
Very Fearful	Fearful	Neutral	Fearless	Very Fearless

**At the third stopping point, please select one point (1-5) on all of the three scales**

**below:**

1	2	3	4	5
Very Sad	Sad	Neutral	Happy	Very Happy

1	2	3	4	5
Very Angry	Angry	Neutral	Content	Very Content

1	2	3	4	5
Very Fearful	Fearful	Neutral	Fearless	Very Fearless

## Appendix D

Our interest in this questionnaire is to learn how people describe others whom they know. Our concern here is with the habits, mannerisms, and with personal characteristics (rather than the physical traits) which characterize a number of different people.

In order to make sure that you are describing real people we have set down a list of two different categories of people. In the blank space beside each category below, please write the initials, nickname, or some other identifying symbol for a person of your acquaintance who fits into that category. Be sure to use a different person for each category.

- 1) A person of about your own age whom you like. \_\_\_\_\_
- 2) A person of about your own age whom you dislike. \_\_\_\_\_

Spend a few moments looking over this list, mentally comparing and contrasting the people you have in mind for each category. Think of their habits, their beliefs, their mannerisms, their relations to others and any characteristics they have which you might use to describe them to other people.

If you have any questions about the kinds of characteristics we are interested in, please ask them. Please look back to the first sheet and place the symbol you have used to designate the person in category 1 here \_\_\_\_\_

Now describe this person as fully as you can. Write down as many defining characteristics as you can. Do not simply put down those characteristics that distinguish him/her from others on your list, but include any characteristics that he/she shares with others as well as characteristics that are unique to him/her. Pay particular attention to his/her habits, beliefs, ways of treating others, mannerisms, and similar attributes. Remember, describe him/her as completely as you can, so that a stranger might be able to determine the kind of person he/she is from your description. Use the back of this page if necessary. *Please spend only about five (5) minutes describing him/her.*

This person is:

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Please look back to the first sheet and place the symbol you have used to designate the person in category 2 here \_\_\_\_\_

Now describe this person as fully as you can. Write down as many defining characteristics as you can. Do not simply put down those characteristics that distinguish him/her from others on your list, but include any characteristics that he/she shares with others as well as characteristics that are unique to him/her. Pay particular attention to his/her habits, beliefs, ways of treating others, mannerisms, and similar attributes. Remember, describe him/her as completely as you can, so that a stranger might be able to determine the kind of person he/she is from your description. Use the back of this page if necessary. *Please spend only about five (5) minutes describing him/her.*

This person is:

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