

Communication Apprehension in a First Language and Self-Perceived Competence as Predictors of Communication Apprehension in a Second Language: A Study of Speakers of English as a Second Language

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This study addresses the communication apprehension of the non-native English speaker in the U.S. Previous studies which have examined the implications of communication apprehension (CA) for bilingual, non-native communicators have generated results which indicate that trait-like CA is consistent across first and second language-speaking situations. However, none of these studies have probed the cause of the cross-linguistic consistency of CA. This research is designed to provide a scientific explanation for the etiology of CA by applying the communibiological paradigm to CA theory and research. By selecting the situational constraints of international students, this study tests a theory based on proposition 4 of the communibiological paradigm (Beatty & McCroskey w/Valencic, 2001, p. 128): "Environment or 'situation' has only a negligible effect on interpersonal behavior." The results of this study replicate the strong relationship previously observed between CA in a first language and CA in a second language. It also found that the genetic markers employed (Eysenck's Big 3 temperament variables) predicted first and second language CA approximately equally. The results indicate that, although both first and second languages are learned, the CA associated with them most likely is not.

KEY CONCEPTS Big 3, communibiology, extraversion, intercultural communication apprehension, learning model, neuroticism, [psychoticism, self-perceived communication competence, situational model, Stimulus-Organism-Response, temperament

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Heredity and environment are regarded as two contributors to the destiny of individuals. Recently, a great deal of scientific evidence has shown that many human traits are controlled by genes, and heredity has become a more

persuasive explanation of individuals' trait behavior. Many scholars in the field of communication have recognized a new paradigm, communibiology, as a result of the impressive advances in neurobiological and psychobiological research. In their essay advocating consideration of this new paradigm McCroskey and Beatty (2000) explain that the "communibiological perspective proposes that inborn, neurobiological structures are responsible for communication behavior and associated processes" (p. 2).

This new paradigm provides different ways of thinking about the domain of knowledge, and, therefore, explains phenomena that were unaccounted for previously. While communication apprehension (CA) has received attention from massive bodies of research, the origin of individual differences in CA has not been fully explained. Employing the communibiological paradigm, Beatty, McCroskey, and Heisel (1998) reconceptualized communication apprehension (CA) as an expression of inborn, neurobiological structures, which are "superior to alternative social learning models in terms of predictive power, comprehensiveness of explanation, and parsimony" (p. 212).

This study addresses the CA of non-native English speakers in the U.S. Some studies have been reported which have examined the implications of CA for bilingual, non-native communicators. The results of these studies suggest that trait-like CA is quite consistent across first and second language-speaking contexts. However, none of these studies have focused on the likely cause(s) of the cross-linguistic consistency of CA.

The present study was designed to explore a scientific explanation for the origin of CA by applying a communibiological paradigm to CA in a second-language speaking situation. By focusing on the situational constraints of international students, this study employs the fourth proposition of the communibiological paradigm: "Environment or 'situation' has only a negligible effect on interpersonal behavior" (Beatty & McCroskey, w/Valencic, 2001, p. 128). The theory that we draw from this proposition, as applied to communication apprehension, is that CA, being caused by genetic factors, will be consistent across linguistic contexts, such that all but a negligible portion of the variance of CA in a second language can be predicted by knowledge of the level of an individual's CA in the individual's first language.

LITERATURE REVIEW

In the first part of this section, the origin of CA is reviewed from the perspective of learning models and situational theory. These explanations of the origin of CA assume the second language situation is the main influence on the CA of international students speaking English in the U.S. The following part discusses the limitations of the learning model and situational model using the traditional stimulus-response (S-R) approach. A rationale for the communibiological paradigm and its support of stimulus-organism-response (S-O-R) approach is provided.

Learning Models and Situational Theory

Origins of CA. The original conceptualization of CA was "a broadly based anxiety related to oral communication" (McCroskey, 1970, p. 269) but it was subsequently modified to "an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons" (McCroskey, 1977, p. 78). The conceptual modification of CA was advanced because the original conceptualization focused only on oral communication and CA as a trait (McCroskey,

& Beatty, 1998).

Since long before the new focus on communibiology, scholars have taken a trait perspective on communication. Learning theories have been employed as the primary explanation of trait communication behaviors, particularly social learning theory (Bandura, 1971). "Social learning theory refers to the process by which individuals develop a repertoire of behavioral options, through the observation of models" (Beatty, McCroskey, w\Valencic, 2001, p. 30).

One approach to situational theories presumes the operation of a situation as a causal stimulus and communication behavior as the response (S-R) to that situation. This approach assumes that a situation stimulates the same communication response across a wide variety of individual responders. According to Beatty, et al., (2001), the application of this approach includes studies on communication anxiety in situations such as meeting strangers or facing uncertainty.

Environmental influence has been the basis for etiological accounts of traits, and CA was viewed as a learned trait. McCroskey (1977) initially proposed CA as a learned trait. "Learned helplessness" theory was the most often cited explanation of the origin of CA. According to Richmond and McCroskey (1985), introverts are presumed to learn to feel anxious when they have low expectation of succeeding in situations and they get to perceive little control over their destiny.

Considering that "the major elements in the situation that can result in increased CA are novelty, formality, subordinate status, conspicuousness, unfamiliarity, dissimilarity, and degree of attention from others" (McCroskey & Beatty, 1998, p. 219), the non-native English speaker in the U.S. is more likely to find herself or himself in situations where it is threatening to speak.

Second Language Situation. It has been thought that second language situations could create and amplify CA. Lucas (1984) states:

If international students are apprehensive about speaking their own language, their fear of communicating in English must be magnified tenfold. In addition, even those international students who are not apprehensive about speaking in their own language can become apprehensive about speaking in English (p. 594).

Besides speaking a second language, the uncertainty of living in a different culture combined with different norms functions as another suspected situational variable, inducing international students to have higher levels of CA. Dillon and Swann (1997) also have argued that situational factors are one of the main causes of international students' CA:

Most retention problems with international students occur because of difficulty adjusting to U.S. culture, and more specifically, the culture of the U.S. college and University system. Retention problems are often the result of international students' dissatisfaction with their communication interactions with teachers and other students in the classroom and in interpersonal interactions outside class (p. 4).

Neuliep and McCroskey (1997) conceptualized intercultural communication apprehension (ICA) separately, as "fear or anxiety associated with either real or antici-

pated interaction with people from different groups, especially different cultural or ethnic groups" (p. 152) and they explained ICA as "a context of communication marked with unusually high uncertainty. Such uncertainty leads to high anxiety, a causal ingredient in communication apprehension" (p. 152).

Culture is defined by Thomas-Maddox and Lowery-Hart(1998) as "shared perceptions which shape the communication patterns and expectations of a group of people" (p. 5). Studies have found various norms of communication traits across cultures. For example, Klopff (1984) studied communication apprehension, in seven different cultures, and found different levels of CA across cultures. These differences are even found within geographically very close or in presumably very similar countries. For instance, substantial differences were revealed between Korea and Japan. According to Klopff's (1984) findings, Japanese have the highest CA and Koreans have the lowest CA.

The normative CA concept in the U.S. has been questioned for its general applicability across all cultures. In many cultures, silence is more acceptable than talking. Watson (1987) found that Puerto Rican youth have higher levels of CA than did American youth. This result is attributed to norm differences between U.S. and Puerto Rico. In Puerto Rican culture, silence is more acceptable for children than talking. Puerto Rican children have limited conversation with adults and their opinions are not highly valued. The CA level of Puerto Rican children was also found to lessen with age, while in the U.S. it does not.

In contrast, a study of Puerto Rican adults (McCroskey, Fayer, & Richmond, 1985) determined that adult Puerto Ricans reported significantly lower CA than adults in the U.S. This study also found that CA scores in Spanish and English among these adult Puerto Ricans were substantially correlated—much more correlated than were CA in the second language and perceived competence in the second language. Similar results have been recorded from research involving adult Micronesians (Burroughs, Marie, & McCroskey, 2003). This suggests that while culture may account for differences between mean scores on CA in first and second languages, some other factor is producing the base level of CA in both the first and second language. Culture cannot account for the substantial correlations observed in CA between first and second language reports by the same people.

Rationale for a Communibiology Paradigm

Based on a review of literature from temperament and psychobiology, it was recognized that the accumulated research of psychobiology on the role of biology in many social behaviors and processes projected a genetic explanation for CA. Beatty and McCroskey (1998) proposed communibiology, placing psychobiology as a point of departure. With its emphasis on the biological affects on behavior, "one of the more controversial aspects of the communibiological paradigm has been the degree to which environmental and situational cues have been de-emphasized" (Beatty & McCroskey, w/Valencic, 2001, p. 119).

Although situation cues may appear to play an important role in communication behavior, there are a few serious limitations in the situational approach. First, there are unlimited numbers of situational characteristics which presumably can affect behavior and no systematic conceptualizations of situations have been well developed. Second, there is lack of empirical research on the situations demonstrating the alleged effects on communication behavior (Daly & Bippus, 1998). The learn-

ing model and situational paradigm have been the focus of research employing the stimulus-response (S-R) model, which suggests behaviors are result of a number of complicated sets of factors. The learning S-R approach, however, has not provided any adequate explanation of why different individuals regularly respond differently to the same situation. Even though the S-R learning model has had generally been discredited by learning theorists, and virtually no communication research has been found it to account for substantial variance in communication behavior, it has maintained its existence via the situational explanation of communication behavior.

Communibiologists adopted a more scientific theory in approaching situational cues than causal S-R ways. Based on the interactionists' view, they support a stimulus-organism-response (S-O-R) method in approaching situation. According to this view, organisms mediate the stimulus and response. This explains individuals' different response to the same stimulus. Communibiologists focus more on the role of the organism than the stimulus, with emphasis on the impact of the neurobiological structure on human behavior. Beatty and McCroskey (1998) also observed the dominant influence of genetic-based temperament on human behavior: "the environment presents stimuli to which individuals react, but temperament mediates the effects of stimuli on the individual's state: environment at best, only slightly affects trait development" (p. 211).

HYPOTHESES

The first three hypotheses were developed from the literatures before the communibiology paradigm to find results consistent with trait-like communication apprehension. The fourth hypothesis was developed from the communibiological paradigm and suggested inborn, neurobiological origins of CA.

Research on Communication Apprehension in Second Languages

McCroskey, Fayer and Richmond (1985) conducted a study to generate normative data on CA for bilingual college students in Puerto Rico. They found that apprehension levels of Puerto Rican college students are much lower than U.S. students in communicating in their native language, Spanish and English respectively. In contrast, the findings revealed that Puerto Rican students are much more apprehensive about communication in English than in Spanish. The study found a significant difference between the proportion of high communication apprehensives in Spanish and English (11% and 43%, respectively-based on U.S. norms). The study also indicated that apprehension in a first language is a much better predictor of apprehension in a second language than is self-perceived competence in that second language.

To test the generalizability of the results of the study, McCroskey, Gudykunst, and Nishida (1985) conducted another study with a sample of Japanese college students. They assumed the Japanese would be at "the opposite end of the continuum from the students studied in Puerto Rico (p. 12)," because the CA level in using a first language in Japan was found to be very high (Klopf, 1984), compared to the low CA level of Puerto Ricans in using Spanish, their native language.

The data from the Japanese students was compared with data from the other groups studied previously. The results indicated a very high percentage (72.6%; based on U. S. norms) of Japanese students could be classified as high communication apprehensives. However, the results of the study with Japanese college students

found no significant distinction between first (Japanese) and second (English) language levels of high CA (72.6% and 74.5%, respectively).

Based on the results of a second study, McCroskey et al. (1985) concluded, "speaking in a second language does not necessarily significantly increase an individual's level of CA" (p. 14). These studies with the Puerto Rican and Japanese samples concluded that the first language CA is the basis for the second language CA. In other words, first language CA determines the level of second language CA.

Allen, O'Mara, Long, and Judd (1986) considered whether non-native English-speaking students are educationally handicapped in American classrooms by their communication apprehension (CA). Their finding indicated strong correlations between CA in native languages and CA in English, which is consistent with previous studies: "CA in the first language is the basis for the minimal level of CA which can be expected in the second language" (Allen et. al. 1986, p.11).

Studies on the relationship between communication apprehension and self-perceived communication competence tended to find a close relationship between communication apprehension and communication competence. Rosenfeld, Grant, and McCroskey (1995) found that whereas academically successful students were least apprehensive, students with low academic achievement were most apprehensive. In speaking with strangers, academically talented students perceived themselves to be the most competent, while students with low academic achievements perceived themselves least competent. The authors concluded that key communication variables affecting academic success are closely related to the communication apprehension and self-perceived competency in speaking to strangers.

The first hypothesis anticipates a strong relationship between CA in the first language and CA in the second language, which is expected to be a higher correlation than that of self-perceived communication competence (SPCC) in English, which presumably has a considerable relationship to CA in English.

H1: CA in the first language is a better predictor of second language CA than self-perceived communication competence in a second language.

More recently, however, Burroughs, Marie, and McCroskey's (2003) study, found that speaking a second language increased apprehension, decreased willingness to initiate communication, and decreased perceptions of communication competence. The authors interpreted the results as a change of orientation. According to them, when individuals are forced to use a non-native language to communicate, their overall orientation to communication may change.

Allen, O'Mara, and Judd (1985) conducted a study to determine the levels of communication apprehension experienced by international students, whose native language is not English. They collected data related to interaction contexts, number of years speaking English, time living in the United States, subjects' place of origin, and the speakers' sex.

The study found that neither the students' number of years speaking English nor the length of time living in the United States correlated with CA. In other words, neither communication competency nor skill in a second language is related to the level of (trait) communication apprehension. The results of this study and other similar studies "suggest that the 'language drag' perceived in non-native English speaking students may not be reflective of either a lack of language competence or

skill" (Allen, et.al, 1985, p. 17).

Wheeless and Williamson (1992) included communication apprehension as a phenomenon that co-varies with uncertainty. Further, their results revealed that both uncertainty and communication apprehension were decreased over time spent in continuing initial interactions. However, the study did not determine whether uncertainty leads to state-CA or state-CA leads to uncertainty. The second and third hypotheses are proposed with regard to the number of years speaking English and the length of time living in U.S. The second and third hypotheses assume cross-linguistic and trait-like CA. The hypotheses predict a stronger association of CA in the first language with CA in the second language than either the number of years speaking English does or length of time living in the U.S. has on CA in the second language.

H2: CA in the first language is better predictor of second language CA than number of years speaking English.

H3: CA in the first language is better predictor of second language CA than length of time living in the US.

While the first three hypotheses simply predict replication of the results of previous studies which have found CA to be a cross-linguistic trait, the fourth hypothesis seeks to determine whether CA can be interpreted as a neurobiological construct which is stable across communication contexts involving different languages.

CA Reconceptualization and Eysenck's Temperament Variables (Big 3)

Beatty, McCroskey, and Heisel, (1998) provided three reasons for using Eysenck's temperament types to understand the nature of communication apprehension.

First a large number of empirical studies indicate that the ratio of genetic inheritance to environmental contribution is estimated to be 80/20 in the three basic personality dimensions. Second, psychobiologists have made considerable progress identifying and mapping genetically inherited individual differences in the thresholds of neurobiological structures responsible for the behavior we observe and interpret as P, E, and N [psychoticism, extraversion, neuroticism]. Third, two of Eysenck's basic dimensions of personality, extraversion, and neuroticism, are the primary subcomponents of CA (p. 200).

Eysenck's (1990) research has demonstrated that individual levels of E, N, and P are primarily attributed to genetic inheritance. In addition, he has identified "neurotic introverts" as people who approach social interaction with fear and anxiety. Clearly, his definition of neurotic introverts is very similar to current definitions of CA.

Extraversion refers to the tendency to be sociable, assertive, dominant, active, carefree, dominant, venturesome, sensation-seeking, and lively. In reacting to situations, extraverts tend to find external stimuli more interesting than introverts. Neuroticism refers to the tendency to be shy, emotional, tense, irrational, depressed, prone toward feelings of guilt, moody, and anxious. The neurotic person tends to have low self-esteem and is prone to high anxiety. Psychoticism refers to a lack of

self-control. Psychotic people tend to be aggressive, antisocial, impersonal, egocentric, unempathic, tough-minded, creative, cold, and impulsive.

Beatty, McCroskey, and Heisel (1998) reconceptualized communication apprehension with a communibiological perspective, positioned CA as a blend of introversion and neuroticism, and provided substantial support from the findings of many studies regarding strong correlations between CA and indices of E and N. It is generally recognized that E, N, and P scores are excellent markers which indicate the presence of genetic elements when any (or all) of these three are correlated with any other trait measure. The fourth hypothesis projected that one or more of these markers would be associated with CA in both first and second languages.

- H4: Communication apprehension in both first and second languages is correlated with genetic markers (E, N, and/or P)

METHOD

Participants

The participants in this study were 120 international students from 26 countries attending a Mid-Atlantic university. All of these students were non-native English speakers, representing 26 national cultures and a wide variety of first languages. Participant volunteers were contacted through the Intensive English Program (IEP), undergraduate and graduate classes, and personal contacts. Participants included individuals from South Asia, Northeast Asian, South America, Europe, and Africa. All participants were considered "fully functional" in English as a second language in that they were university students in good standing who had satisfactorily completed one or more semesters of course work.

Measures

Communication Apprehension. The 24-item version of the Personal Report of Communication Apprehension, PRCA-24 (McCroskey, 1982) was used to assess communication apprehension. This instrument allows for CA to be assessed in four different contexts: group, meeting, dyad, and public speaking. In the present study, the obtained alpha reliability estimates of CA in first language and CA in second language were both .96. (see Table 1).

TABLE 1
Alpha Reliability Estimates, Means, and Standard Deviations for Measures

Name of Measure	Reliability	Means	S.D.
Comm Competence in second language (English)	.96	82.3	16.7
PRCA24 in second language (English)	.96	55.8	19.6
PRCA24 in native language	.96	51.7	18.8
Extroversion	.78	23.8	3.4
Neuroticism	.87	17.2	4.7
Psychoticism	.80	18.5	4.1

Self-Perceived Communication Competence. The Self-Perceived Communication Competence (SPCC) McCroskey & McCroskey, (1988) scale was used to measure the participants' perceptions of their own communication competence. This scale includes four communication contexts (small group, meeting, dyad, and public speaking) and three types of receivers (stranger, acquaintance, and friends). To measure the

communication competence in a second language, all the contexts are given with a condition, "when you speak in English." The alpha reliability estimate of the SPCC in this study was .96.

Temperament. To measure temperament, this study employed Eysenck, Eysenck, and Barrett's (1985) 32-item instrument. The measure of included 12 items to measure psychoticism, 10 items to measure extraversion, and 10 items to measure neuroticism. Alpha reliability estimates for this study were .80 for psychoticism, .78 for extraversion, and .87 for neuroticism.

Procedure

The participants were asked to complete the SPCC with regard to how competent they believe they are when speaking their second language (English) and two versions of the PRCA-24 instrument were administered. One version asked them to respond with regard to when they speak English and the other asked them to respond with regard to when they speak their native languages. The temperament scales were presented to the participants with no reference to language or culture. The scales were administered in random order. Additionally, the survey instrument included questions soliciting information concerning participants' sex, age, home country, native language, years lived in the U.S., and years in which they have spoken English. The average duration of speaking English reported was about 11 years, but the average time for participants living in the U.S. was only two years and nine months. The average age of the participants was 25.7 years, with ages ranging from 17 to 47. Seventy-seven participants (64.2%) were male; the remaining 43 subjects (35.8%) were female. A copy of the research instrument may be obtained by contacting the first author.

Data Analyses

Hypotheses 1-3 were tested by simple Pearson correlations. Hypothesis 4 was tested by simple and multiple correlations of the genetic markers (E, N, & P) with the criterion variables (CA in native language and in English).

RESULTS

As assumed as a function of the selection process for recruiting participants, preliminary analyses indicated participants were found to perceive themselves as competent communicators in English. The mean total score on the SPCC was 82.3. The mean score for CA in English was found to be slightly higher (55.8) than CA in the first language 51.7. Both CA in second language and in native language were found to be relatively low compared to very large U.S. samples speaking English ($M=65.6$, $S.D.=15.3$), but both means were within one standard deviation of the U.S. norms. The means and standard deviations of all measures are reported in Table 1.

Hypothesis Tests

The results of the simple correlation analyses are reported in Table 2. The first three hypotheses were all supported. As predicted by the first hypothesis, CA in the first language was a statistically significantly ($t=7.57$, $p<.0001$, $\eta^2=.34$) better predictor ($r=.87$) of second language CA than was communication competence in a second language ($r=-.58$).

The second hypothesis, regarding the years speaking second language, English,

TABLE 2
Correlations Among Variables Studied

	CA in English	CA in Native language	Years living in U. S	Years speaking English
CA in English	-----	.87*	.04	-.39*
CC in English	-.58*	.47*	.02	.49*

* $p < .0001$. Other correlations are NSD. $p > .05$.

also was supported. As predicted by the second hypothesis, CA in the first language was a statistically significantly ($t=10.36$, $p<.0001$, $\eta^2 = .60$) better predictor ($r=.87$) of CA in the second language CA than years of speaking English ($r= -.39$).

The third hypothesis, regarding length of time living in the U.S., found that CA in the first language significantly predicted CA in the second language ($r=.87$) CA while time living in the U.S. ($r=.02$) did not ($t = 145.31$, $p < .0001$, $\eta^2 = .76$).

The fourth hypothesis predicting that CA would be significantly correlated with Eysenck's dimensions of temperament, was supported. All three temperament scores were significantly correlated with both first and second language CA (see Table 3). The multiple correlations (see Table 3) indicate that the three temperament variables could account for substantial variance in CA for both languages. Although no hypothesis was posed for self-perceived communication competence, results indicated that SPCC scores were significantly associated with both extroversion and psychoticism.

TABLE 3
Correlations between Communication Traits and Temperament Traits

	Extraversion	Neuroticism	Psychoticism	Multiple r
CA in English	-.38***	.22 *	.20*	.42***
CA in Native language	-.37***	.31**	.18*	.44***
CC in English	.31**	-.01	-.19*	.34***

* $p < .05$; ** $p < .001$; *** $p < .0001$

DISCUSSION AND CONCLUSIONS

The results of this study indicate that communication apprehension is a cross-linguistic trait. Given that the genetic marker variables employed in this study were almost equally predictive of CA in first and second languages, it appears likely that the etiology of this cross-linguistic trait is genetic.

Beatty & McCroskey w\Valencic (2001) have advanced communibiology as a paradigm, which provides the groundwork for theory development, rather than a theory itself. Unlike theory, "Paradigms simply raise the questions: 'What if we looked at this process differently?' 'If we turn the model upside down, would the data fit better?'" (p. 7).

The traditional view of CA has been that it is caused by learning and can be altered through learning experiences. We questioned this view. If this view were true, CA in second languages should be greatly impacted by experiences involved in learning and using that second language. However, the fourth proposition of communibiology argues that "Environment or 'situation' has only a negligible effect

on interpersonal behavior." Hence, this research, accepting this communibiological assumption, hypothesized that CA in a second language would be best predicted by CA in a first language, better than prediction based on self-perceived communication competence in the second language, living and using the language in the U.S., or total years of experience speaking the language. All of the latter variables were presumed to represent learning experiences. Self-perceived communication competence, however, was found also to be associated with genetic markers (but less so than CA). This indicates that it is less likely that self-perceived communication competence has an etiology that is strictly learning-based.

The results, showing a strong correlation between CA in a native language and CA in a second language, are consistent with the findings of previous studies of cross-linguistic, trait-like CA. The present study supported the view that the etiology of trait CA is at least partially, and possibly wholly, genetic. Compared to the situational factors like years of speaking English or living in the U.S., CA in a first language was found to have a much higher and more significant impact on CA in a second language.

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