

Measuring Healthcare Cross-Cultural Competencies: A Pilot Survey with University Students

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Abstract

Background: Accent-related difficulties and perceptions create communication barriers that affect patient safety and quality of care. However, healthcare communication trainings seldom measure how students' knowledge, attitude, and skills shift with regard to the actual perception of the cross-cultural communication, including accent differences. **Method:** This pilot study assessed baseline knowledge and stereotypes regarding accents through a 42-item questionnaire survey, the Cross-Cultural Communication Quotient (CCQ). The survey was administered across five classes in two universities. **Results:** 186 (85% females) respondents were included in the analyses. Results showed the average score for knowledge is 65%; stereotypes: 67%; and competency: 66%. Higher scores of accent knowledge are associated with higher levels of competency ($\rho=0.18$, $p=0.015$). Higher stereotype scores (lower levels of accent stereotype beliefs) are associated with higher levels of competency ($\rho=0.15$, $p=0.048$). Interestingly, higher knowledge scores are associated with lower stereotype scores (i.e., higher levels of stereotype beliefs), suggesting that more knowledge does not prevent stereotype beliefs ($\rho=-0.34$, $p<0.001$). **Conclusions:** Findings suggest that knowledge and stereotypes are both reliable predictors of competency in cross-cultural communication. Many gaps in students' knowledge of accent-shaping, and presence of stereotypes related to accents identify the need to build competencies in this area of cultural competence. Furthermore, higher level of knowledge does not prevent or reduce stereotype beliefs. We recommend developing healthcare education curricular programs that focus more intentionally on addressing stereotypes, in addition to the more traditional knowledge-building elements.

Keywords: cross-cultural communication; intercultural; competency; accent; cultural competence; healthcare

INTRODUCTION

Cross-cultural and intercultural communication barriers between patients and healthcare providers lead to disparities in care, breakdown of patient trust, patient dissatisfaction, poor adherence to medications, and poorer health outcomes [1, 2]. A frequent barrier to cross-cultural communication is the mismatch between speakers' and listeners' accents, leading to the perception of a "different accent". While accents are a natural characteristic of

pronunciation of language, they have been shown to present a barrier to effective cross-cultural communication in the healthcare settings [3, 4]. Communication barriers involving accents encompass two underlying issues. First, differences in accents between speakers and listeners create a breakdown in clarity and comprehension of communication [5]. Secondly, listeners have stereotypes and judgments about accents, which then affect the decisions they make [6, 7, 8]. In order to navigate such cross-cultural barriers, healthcare students and providers routinely receive cultural competence trainings [1]. The 2013 National Standards for Culturally and Linguistically Appropriate Services (CLAS) call for quality healthcare services that are responsive to diverse cultural beliefs and practices [9]. The CLAS call further provided the impetus for accreditation standards in Nursing and Pharmacy, for example, to require cultural competence trainings in their curricula.

Current models of the development of cultural competence (e.g., the IDEA model [10], LEARN Framework [11], The Purnell Model [12], The Leininger Sunrise Model [13], The Campinha-Bacote Model [14], or the Giger and Davidhizar Transcultural Assessment Model [15] do not attempt to account for the accent-related competence, specifically the assumptions related to accents and speech variables in the cross-cultural communication. In order to follow an evidence-based pedagogical framework for offering cross-cultural communication competence training, it becomes important to assess objectively students' knowledge and stereotypes/biases (as barriers to learning), as well as skills and competencies in understanding accented speech at baseline and after training. Typically, studies measure the degree of changes in students' knowledge, attitude and skills related to cultural competency as a result of the targeted education [16, 17, 18, 19]. However, none of the studies to date have attempted to measure how students' knowledge, attitude, and skills shift with regard to the actual perception of the cross-cultural communication, including accent differences. It would be beneficial to identify these perceptions early on, and thereby address them in course of healthcare students' educational training. Without the understanding of attitudes and behaviours related to what listeners hear in crosscultural communication, and to any pre-existing biases they may have based on those communication stereotypes, the ensuing trainings and curricula may not be sufficiently addressing the gaps in developing cultural competence.

As a first step towards addressing the communication/accent element in diversity curricula in healthcare education, this exploratory study aims to measure students' baseline cross-cultural communication competencies related to accents, and understand the influencing factors. In this initial iteration, the study explored baseline competencies in both, healthcare students as well as students in other professional programs where cultural competence trainings are also provided. Collectively, it would help understand the nature of students' knowledge and competency in programs where students would routinely encounter communication diversity, and where part of their professional skills would be the need for good competencies in managing cross-cultural communication. The results of such pilot studies are expected to help in the longterm to develop a good baseline instrument specifically for healthcare students, that would be informed by the unique needs and gaps experienced by healthcare students.

In the present study, baseline cross-cultural competence is assessed through questions in three key areas: 1) existing factual knowledge, 2) existing stereotypes, beliefs, and biases, and 3) existing competencies that encompass preferences and choices they are likely to make, as well

as their use of specific skills in navigating communication with diverse accents (henceforth referred to as “competency”). The specific research questions are:

- What are average baseline levels of knowledge about cross-cultural communication and accents that students have before any specific training related to cultural competence is provided?
- What are pre-existing stereotypes (both, positive and negative) that students tend to hold as part of a baseline assessment?
- What are their baseline choices they are likely to make in working with culturally-and linguistically-diverse individuals?
- What are the factors that affect an individual's preferences and choices they make when working with culturally-and linguistically-diverse individuals? Specifically, is knowledge a significant factor influencing competency? Are stereotypes a significant factor to competency?
- Is there a relationship between knowledge and stereotypes in how they interact to influence competency?

METHODS

Participants

To answer the research questions, a Cross-Cultural Communication Quotient (CCQ) Survey instrument was developed and administered across two universities in five courses. Applying the convenience sampling method, the study population included university students enrolled in eight sections of the five courses (including 5 undergraduate sections and 3 graduate sections). The CCQ responses from 186 participants were included in the analysis (females: 158, 85%, undergraduates: 149, 80%). The average age of participants was 25 (SD = 9.7, range: 18–58 years). More than half of the participants (N=106, 57%) majored in health sciences, including communication disorders. The rest of the participants came from a range of fields, such as organization psychology and leadership (17%), communication (8%), and social work (9%), and general studies (9%). Majority of students were white, monolingual English-speaking Americanborn students.

Survey Instrument

Due to the lack of any available tools for assessing accent-related competencies, The CCQ survey, a 42-item self-rating survey, was created by the first author to investigate baseline knowledge and cultural competencies of healthcare pre-professionals (students in training). The survey was designed to identify what these individuals knew and believed about accents and how competent they are when working with individuals with accents different from their own. Lacking the availability of any tools that serve this purpose, this survey was intended to assess baseline cultural competence level at any of the three possible points: at the beginning of a program of studies, at the start of a cultural competence training, or at any point during their professional preparation. Except the demographic questions, this survey applies Likert scaled questions to assess three broad areas: *participant factual knowledge, stereotype beliefs, and competency*. The questions in each section were framed based on the review of the wider literature in each section, as described in the following section.

In the section on *factual knowledge*, 10 questions were selected to represent essential pieces of information individuals should have as part of a basic understanding of cross-cultural

communication, accents, and second language learning processes. A vast body of research findings from literature in the fields studying the processes and variables of second-language learning have helped identify often-cited second-language learning variables related to accents e.g., age, gender, motivation, length of residence, use of first and second language and more [20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30]. The 10 questions used in this knowledge part of the survey were designed to test the baseline knowledge and awareness of these variables by students. The ten questions addressed five themes: knowledge of factors that affect accent origin (e.g., age of acquisition of a second language), knowledge of factors that affect accent shaping (e.g. length of residence in a foreign country), knowledge about intelligibility and proficiency as separate from having an accent, knowledge about awareness of one's own accent as a part of the "communication burden" in two-way communication, and knowledge of the consequences and impact of accents on individual's lives. A survey of the long body of research work in this area shows the anecdotal beliefs and assumptions held by people about these critical factors shaping second language learning. Incorrect assumptions in these areas can lead to incorrect expectations from second-language speakers of a given language. For example, believing that longer one lives in a foreign country and longer one practices a new language, the more proficient one can become – however, research shows otherwise, in that after 5-7 years of initial period of change and growth after moving to a foreign country, further language learning or changes to the accent reach a plateau [31]. Being aware of such knowledge and limits is important to tempering students' expectations from second-language learners' communication abilities. Similarly, a frequently-confused notion is that of degree of language proficiency determined by the degree of accent, i.e., the presence of a strong accent is mistakenly assumed to mean the second-language learners are not competent in the language itself. Thus, one of the survey questions helped unpack this awareness by referring to the frequently-cited literature distinguishing intelligibility/clarity from the degree of accentedness [28].

In the section about *stereotype beliefs*, 13 questions were selected in this instrument such that they represented the beliefs and perceptions – both positive and negative – that are frequently associated with different types of accents and cross-cultural communication. The selection of these questions was grounded in sociology and bias research that documents stereotypes held for accents and communication patterns [32, 33]. Research has frequently and consistently identified a range of stereotypes and judgments associated with accents, such as certain accents being perceived as more educated or of higher status, certain accents as friendly and trustworthy, while speakers of some accents being pre-judged and associated with criminality [34]. Accent judgments also span beliefs about speakers' physical traits such as height, weight, color, race, attractiveness and so on [35]. The present survey sought to assess students' awareness of their own judgments and stereotypes along these research-established traits and typical stereotypes. The questions addressed four themes: competence judgment (e.g., education level, intelligence level); physical stereotypes (e.g., attractiveness, sexiness); personality-based stereotypes (e.g., intrigue, friendliness, trust, likeability, enjoyable, irritating); and success-based stereotypes (e.g., class and socio-economic status).

In the final section of *Competency*, 12 questions were selected to represent baseline skills one has (e.g., skills in understanding speech spoken with different accents; ability to identify representative linguistic features in different accents; recalling previously-heard accents), the choices one tends to make (e.g., choosing to take a class with a professor with an accent;

choosing to date someone who spoke with a foreign accent), the degree of comfort and confidence in interacting with different accents and cultures (e.g., confidence in working under someone with a foreign accent; comfort and confidence in receiving customer service from someone with a foreign accent). These questions were selected as part of the behaviour and attitude outcomes we would expect to meet in developing cross-cultural communication competencies [36, 37, 38].

Procedure

The CCQ questionnaire was pre-piloted with students and faculty in the departments of Speechlanguage Pathology, Psychology, and Communication to improve face validity. Minor revisions were made based on participants' feedback, including wording of the questions to reduce ambiguity in interpreting any given question. This questionnaire was then administered in-class near the beginning of the semester in each of the classes surveyed (Classes N=5; total student N=197). Responses that have completed at least 34 out of the 37 key questions were included in this analysis (N=186). The study protocol was approved by Cleveland State University's Institutional Review Board (Protocol#27118-SHA-HS).

Survey Analysis

The distributions of participants according to their self-rated levels of knowledge, stereotype, and competence related to accent, respectively, are presented in percentages. Low level of knowledge is defined as a score of 1, 2 or 3 on 7-point Likert scale, moderate level is defined as score 4 on 7-point Likert scale, and high level is defined as a score of 5, 6 or 7 on the 7-point Likert scale. Similarly, the 7-point Likert scaled competency questions were coded into low (answer options of 1-3), medium (answer option of 4), and high levels (answer options of 5-7) for the distribution analysis. The 7-point Likert scaled stereotype questions were also coded into three levels for the distribution analysis, indicating the extent of biased stereotype beliefs (positive biases or negative biases) from the least biased to the most.

A participant's accent-knowledge total score was calculated by combining their 7-point Likert scaled scores in all ten knowledge questions. Higher score in this measurement indicated higher level of knowledge. This score was then presented as a percentage by dividing the participant's score by total possible score for this variable (70). Similarly, the competency score (as a percentage) combined the twelve competency questions, with higher score indicating higher level of competency, openness and inclusiveness. The stereotype score (as a percentage) combined the thirteen stereotype questions, with higher scores indicating less stereotype beliefs. These total scores (knowledge, competency, and stereotype) were then used in the next exploratory testing for correlations. The Spearman correlation test was first conducted to investigate potential associations among the three key variables. Linear multiple regression test was also run based on the correlation test findings, with the regression model's dependent variable set as competency and independent variables set as knowledge and stereotype. The Microsoft Excel application and SAS package were used in the analysis (at 0.05 significance level).

RESULTS

Participants' Factual Knowledge Level

Table 1 shows the participant distribution according to their self-rated knowledge level. The questions about "awareness of one's own accent" as it pertained to cross-cultural

communication were rated the lowest. For instance, when asked “How well do you think people with foreign accents understand you when you speak?” 47% students scored 1-3 (low level of knowledge), and 37% students score 4 (medium level of knowledge), indicating a wide-spread lack of knowledge of one’s own accent and the challenge to the listeners in cross-cultural communication. Participants showed more accuracy in knowledge in the area of “accent origin”. For example, when asked “To what degree is an accent an indicator of where someone grew up?” 69% students scored high (5-7, with score 7 as “very”). When asked “To what extent do you think someone’s accent is influenced by the age they learn English?” 62% students score high. Across all the questions related to Factual Knowledge, the whole range of the Likert scale (scores from 1 to 7) was observed in the sample which indicates there are many fallacies held by at least some participants. Overall, 23% students showed low knowledge level and 25% at moderate level, which indicates that students do not have the necessary knowledge to engage with sufficient awareness, competence, or with due sensitivity in cross-cultural communication.

Accent Related Stereotypes

Students with more stereotype beliefs, i.e., with either more positive stereotype beliefs or more negative stereotype beliefs, are regarded as more biased, and as a result getting a lower score. Table 2 further shows the distribution of participants according to their self-rated stereotype belief level. Scores from individual sub-categories suggest that the participants had a somewhat high degree of stereotype beliefs, more so in some areas than others. For example, 41% students reported biased view regarding personality stereotypes and also physical stereotypes. Within the personality stereotype beliefs, more students tended to feel positive stereotype biases (e.g., associating a foreign accent with “intriguing”) than those with negative stereotype biases (e.g., associating accents with “cringe or feel irritated”). Similarly, positive biases on physical stereotype topics were reported (e.g., associating accent with sexiness). Taken together, over 48% students exhibited moderate to high degree of stereotype biases.

Accent Related Competency

Table 3 shows the distribution of participants according to their self-rated competency level related to accents. Within the sub-categories of competencies and skills, students reported a high degree of comfort and confidence in their skills in interacting with accents and diversity. For instance, when asked “How confident would you feel about following directions of or working under someone with a foreign accent?” 72% students reported high level of confidence. *However, in contrast to their high comfort level, they reported a low degree of actual choices or preferences in interacting with accent diversity.* For example, when asked “How hesitant would you be to sign up for a class where the professor has a foreign accent?” 24% students scored low (1-3, with score 1 as “very hesitant”) and 21% scored moderate (“somewhat hesitant”). Similarly, students also reported a low level of skills in dealing with accents. When asked “How skilled are you at identifying where people are from, based on their foreign accents?” 43% students scored low (1-3, with score 1 as “not at all”) and 22% scored moderate (“somewhat”).

Associations among Accent Knowledge, Stereotype, and Competency

The average score among the study participants on accent-related factual knowledge is 65%, 67% for accent-related stereotypes, and 66% for accent-related competency. Using these three scores, the exploratory correlation testing (Spearman) results indicated that the relationship

between accent-related factual knowledge and competency ($\rho=0.18$, $p=0.015$) is statistically significant, with higher levels of knowledge associated with higher levels of competency, see also Figure 1. Similarly, the relationship between stereotypes and competency is statistically significant, with fewer accent stereotype beliefs associated with higher levels of competency ($\rho=0.15$, $p=0.048$). While both of these preceding correlations align well with the expectation that increasing knowledge, and reducing stereotypes helps increase competency, however, this study identified a surprising, somewhat counterintuitive correlation, namely, higher levels of accent knowledge are also associated with more stereotype beliefs ($\rho=-0.34$, $p<0.001$). Given the significant associations above, we hypothesized that better knowledge and less stereotype beliefs would serve as significant predictors of competency. We ran this regression model and the analysis results suggest that higher levels of accent knowledge are associated with higher levels of competency related to accent ($b=0.31$, $p=0.008$), less stereotype beliefs regarding accents are associated with higher levels of competency related to accent ($b=0.16$, $p=0.004$). The overall model is statistically significant ($F=5.8$, $p=0.004$).

DISCUSSION

The consequences of lack of awareness of these cross-cultural communication issues, and a lack of preparation to meet this gap in cross-cultural communication on part of students as future healthcare providers and their patients can lead to serious concerns and impact on key metrics such as the quality of care, patient satisfaction, patient safety, hospital liability, and hospital reimbursement. Some of these problems and health disparities can be reduced early through teaching and training of students in healthcare programs (e.g., nurses and medical residents) before they join the medical workforce. After a review of existing models of cultural competency, including the IDEA model [10] and the LEARN framework [11], three limitations are observed in existing approaches: 1) these trainings often do not directly address communication issues, particularly those stemming from reduced intelligibility of accents, 2) trainings do not typically have a baseline assessment of these existing stereotypes or knowledge of communication differences across cultures and languages, and 3) these training also do not assess for participants baseline skillset/competency (e.g., exposure to different accents, ability to listen to and understand accented speech, and self-awareness of personal challenges as well as talents in listening to diverse accents).

While training and developing effective cross-cultural competencies with accents is much needed, the discussion of these issues in healthcare is preliminary and unstructured. To date, there are no studies that show the baseline preparation and awareness of students about issues of production and perception of accents and the spoken-element of cross-cultural communication. Existing assessment tools often do not focus on all dimensions of cross-cultural competence, an important but under-addressed dimension is communication [39, 40]. Specifically, there are *no* available tools or studies that screen for accent-related knowledge, assumptions, attitudes, or competencies. Over the long term, it would be useful to have a standardized tool that assesses students' baseline knowledge and skillsets in interacting with accents among both, healthcare providers as well as their patients. Such a reliable and effective baseline assessment tool can also help provide direction for focused skills in order to build a robust curriculum for training students to be effective in their cross-cultural communication competency. As a preliminary, exploratory step in this longer needed effort, the present pilot study measured university students' baseline knowledge, stereotypes, and competency related to accents. The CrossCultural Communication Quotient (CCQ) survey was developed with

questions selected based on an exhaustive review of literature in the allied fields studying the production and perception of accents, including biases, fallacies, assumptions, and processes in the shaping of accents in the course of learning a second language. This instrument served as a useful preliminary tool for baseline assessment of the healthcare students in their knowledge, stereotypes, and competency concerning cross-cultural communication. The CCQ instrument adds to the limited body of instruments available for assessing cross-cultural communication, and enables assessing the understudied but crucial area of accents. Future research can continue to assess and validate the effectiveness of this tool for identifying baseline status as well as comparing progress during the course of specific cultural-competence training curricula.

Crucially, findings from the survey identified several gaps in students' pre-existing knowledge and attitudes, as well as in working skills and competencies in cross-cultural communication. Across all the questions related to Factual Knowledge, 23% students showed low knowledge level and 25% at moderate level, and scores on individual questions revealed that there are many fallacies held by many participants. Overall, this suggests that do not have the necessary knowledge to perform competently in cross-cultural communication, and in particular, identifies specific gaps to address in a cultural competence training curriculum. These findings have a direct bearing on training and curriculum development. Specifically, gaps in competency and skills in working with individuals who are culturally and linguistically diverse from the students should be addressed in training curricula to build cross-cultural communication competencies. The training should focus on specific knowledge gaps highlighted in the current survey, e.g., knowledge about cross-cultural communication and accents, in particular, to increase awareness of one's own accent, awareness of how accents are shaped, and the knowledge of consequences and discrimination related to diverse accents.

In the area of stereotypes, scores suggest that the participants had a somewhat high degree of stereotype beliefs, e.g., 41% students reported a high degree of beliefs held regarding personality stereotypes and also physical stereotypes. Regarding personality stereotypes, more students tended to feel positive stereotype biases (e.g., associating a foreign accent with "intriguing") than those with negative stereotype biases (e.g., associating accents with "cringe or feel irritated"). Similarly, positive biases on physical stereotype topics were reported (e.g., associating accent with sexiness). Taken together, over 48% students exhibited moderate to high degree of stereotype biases. It is important to recognize that even positive stereotypes can create barriers to effective cross-cultural communication therefore, these results make a strong case for addressing stereotypes in a curriculum or training program for cultural competence. Moreover, the students in this study are from professional programs such as health science, speech-language pathology, communication, psychology, and healthcare business, and therefore have had prior exposure to knowledge about cultural differences as well as some classes on cultural competence. To that extent, it is not surprising that they did not report negative bias towards stereotypes. However, it may well be that in a typical mixed undergraduate class we may still find at least some students with negative stereotypes and prejudices. Hence, using a baseline assessment (such as the present one) that mines for stereotype beliefs is important to implement in order to identify the potential barriers that future training and teaching can address. These findings bear important implications for cultural competence trainings in that the training curriculum should also address key

stereotypes held in the area of physical and personality traits associated with accents, as identified in the survey.

Several important findings emerged in the competency section. For example, in contrast to their high comfort level, the participants reported a low degree of actual choices or preferences they have in interacting with accent diversity. Similarly, they also reported a low level of skills in dealing with accents. The identification of areas where basic competencies were low in this baseline survey instrument provided meaningful information to direct further cultural competence training. Specifically, these low level of skillsets and choices make an important case for further awareness and training to address attitudes, and crucially, developing real-life working skills and behaviours in understanding accents. Often, a traditional cultural competence curriculum focuses on building awareness and increasing conceptual knowledge; however, based on the survey findings, it is important to assert that curricula should focus more on training students on building new behaviour and real-life working skills (e.g., exposure and training by listening to a variety of accents, learning to read nonverbal and verbal cues effectively in patients and others), and not just limit to conceptual knowledge or awareness-building.

Furthermore, the associations among knowledge, stereotype, and competency found in the survey suggest that cultural competence training curriculum should focus on both building knowledge and reducing stereotypes. Literature suggests that having stereotypes can be a barrier to effective cross-cultural collaboration [6, 7]. We recommend developing curricular programs that focus more intentionally on addressing stereotypes, not just the negative biases, but also positively-held bias beliefs. Positive stereotypes can set up false expectations, that when not met in reality, can disrupt the communication and connection with a culturally-diverse person, further breaking down trust and understanding. Students should be trained to engage with culturally diverse individuals from a “zero assumption” starting point. In other words, students should be made aware of their own pre-existing stereotypes and assumptions, be able to discern why and how those assumptions can pose a threat, and be able to gain skills to put those assumptions aside and learn to engage newly with a new person.

The survey results suggest that knowledge and stereotypes are both reliable predictors of competency, but higher level of knowledge does not prevent or reduce stereotype beliefs. Thus, a final salient message from this pilot study was in the finding that knowledge and stereotypes are negatively related to each other, in other words, increasing the level of knowledge does not prevent or reduce stereotype beliefs. This finding confirms above-mentioned need for intentional focus on stereotype-reduction in curricular programs. An emphasis on conceptual knowledge teaching alone will not prevent stereotypes. Therefore, a focused approach involving simulation, real-life encounters, and experiential training are more likely to change stereotype beliefs, and bring the students to the “zero assumption” starting point as described above.

STUDY LIMITATIONS

There are a few limitations in this pilot study. A main limitation of the present study relates to the survey method that was based on self-perception. Typically, participants will likely provide ratings that put them in a positive light, which might be the case in this study. For instance, the participants appear to have attributed more positive traits than negative ones to accent-related

stereotype beliefs. However, the fact that there were still many negative stereotype beliefs being reported suggests validity of this instrument in identifying stereotypes in general, and in particular, those perceptions that are counterintuitive. While this pilot study using convenience sampling method is small, we believe this is a valuable step in the direction towards filling a critical gap in the area of cross-cultural communication competency-building. The goal of the pilot study is to explore the field of cross-cultural communication on important topics such as accent knowledge and stereotype by employing a set of theory-based questions. The key findings indicate gaps in students' knowledge of accent-shaping and the presence of stereotypes related to accents. This suggests value in further investigation into these issues in the area of cultural competence building. Due to the nature and aim of the pilot, factor analysis and reliability testing (such as Cronbach's alpha tests) on the instrument itself were not the study focus and were not reported herein. Future studies should conduct large-scale efforts to test assumptions and competencies, test reliability and validity of competence measurement tools, and also assess the efficacy of the training programs using these assessment tools to make pre- and post-training comparisons. This pilot study highlighted the importance to address communication issues related to accent in cultural competence training. Future studies may also target key curricular changes as recommended above, and assess their impact on students' competency.

In conclusion, this pilot study with university students identified gaps in students' crosscultural communication competence, in terms of accent-related knowledge, stereotypes and skills. Findings also showed that more accent knowledge and less accent stereotype beliefs are associated with better communication competency. But more knowledge did not reduce stereotype beliefs. These suggest developing curricular programs that focus more intentionally on aspects of accents, addressing knowledge-building elements as well as stereotypes.

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Table 1. Participants-reported knowledge level

Knowledge domain	% of Respondents with		
	Low level of knowledge	Moderate level of knowledge	High level of knowledge
Accent origin	18%	21%	61%
Accent shaping	29%	30%	41%
Intelligibility/proficiency related to accents	9%	20%	71%
Awareness of one's own accent	39%	31%	30%
Consequences/impact of accents	18%	23%	59%
Average of all knowledge questions	23%	25%	51%

Table 2. Participants-reported stereotype belief level

Stereotype belief topic	% of Respondents with		
	The most stereotype beliefs	Moderate level of stereotype beliefs	The least stereotype beliefs
Competence & Education	18%	23%	59%
Personality	41%	19%	40%
Success	16%	19%	65%
Physical	41%	16%	43%
Average of all stereotype questions	28%	20%	52%

Table 3. Participants-reported competence level

Competence area	% of Respondents with		
	Low level of competence	Moderate level of competence	High level of competence
Baseline skills	20%	26%	54%
Choices	32%	20%	48%
Comfort and confidence	17%	19%	64%
Average of all competence questions	23%	22%	54%

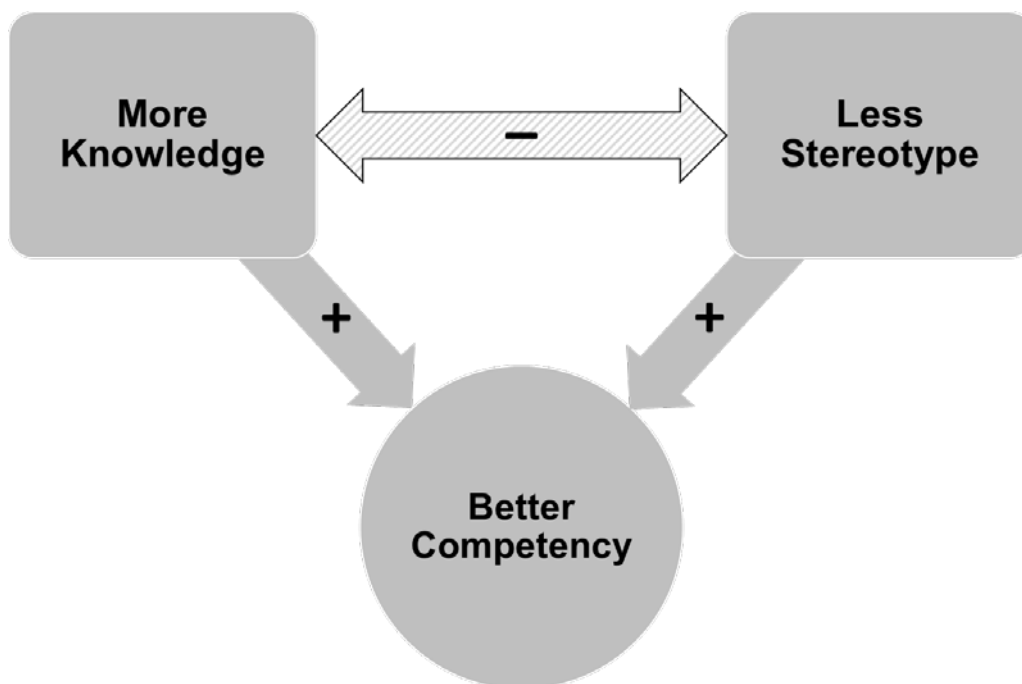


Figure 1. Associations between Knowledge, Stereotypes, and Competency