Beyond Gardner: A Pilot Case Study Assessing Teachers' Linguistic Intelligence

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Drawing from the work of Van Dyne, Ang, Ng, & Koh's (2012) cultural intelligence (CQ) and Gardner's (1983) linguistic intelligence (LQ), the first goal of this study has been to redefine and construct four-factor linguistic intelligence—linguistic knowledge, pedagogical knowledge, valuing linguistic and cultural diversity, and linguistically responsive teaching behaviors. These four factors, situated in an LQ framework, are supported by literature on teachers' linguistic capacity for effectively teaching ELLs. The second goal has been to explore, using a survey and an interview protocol, how teacher participants perceive their own levels of CQ and LQ. In general, the participants displayed more proficiency in CQ than in LQ. In-service teachers and grant program completers perceived higher competence in LQ and CQ than did pre-service teachers. While there appears to be overlap between both CQ and LQ, differences also appear to exist. Implications and future directions are discussed about this emerging area.
Keywords: cultural intelligence, linguistic intelligence, teaching English language learners, TESOL

While the student population of American schools has become increasingly heterogeneous, the teachers charged to shape the minds of the diverse population have remained overwhelmingly homogeneous. Most teachers are monolingual, female, and white, and they have not been adequately trained to educate the diverse students, especially linguistically diverse ones (National Center for Education Statistics, 2012). Fillmore and Snow (2002) elicited that all teachers "need a thorough understanding of how language figures into education and for that reason they must receive systematic and intensive preparation" (p. 9). Halliday (1975) posited that "learning of structure is really the heart of the language learning process" (p. 1), and used the word "acquisition" in relationship to language structure, the core of linguistics—phonology, syntax, and semantics. There should also be greater awareness of the relationship between linguistic and sociocultural competence (Byram, 1997; van Ek, 1986).

A number of research studies have been done on teachers' cultural competence and/or culturally responsive teaching in education. There has not yet been much research focusing on linguistic competence for content classroom teachers, who have to accommodate or differentiate their teaching strategies for English language learners (ELLs). Drawing from the work of Gardner's (1983) linguistic intelligence and building upon Van Dyne et al.'s (2012) cultural intelligence, our aim has been to redefine and repurpose linguistic intelligence that measures teachers' linguistic and pedagogical competence, cross-cultural competence, and linguistically responsive teaching strategies.

Two goals were established for this study. The first goal was to develop a framework of linguistic intelligence (LQ) based on cultural intelligence (CQ)—a construct that already has established reliability and validity. The second goal was to explore how teachers participating in a grant-funded TESOL training program would perceive their own levels of CQ and LQ. To assess teachers' levels of cultural and linguistic intelligence, a survey and a semi-structured interview protocol were developed and utilized (Appendices A & B).

Two hypotheses were proposed for a quantitative part of this study:

1. Significant differences from the LQ survey results will exist between the cultural intelligence and the linguistic intelligence of the participating teachers; and

2. Significant differences from the LQ survey results will exist between the pre-service and in-service teachers.

In addition, a research question was proposed for a qualitative part of the study: "How do participating teachers perceive their competence levels of LQ and CQ?"

Gardner's Linguistic Intelligence

In Gardner's (1983) seminal work *Frames of Mind,* he formulated linguistic intelligence and included the "rhetorical aspect of language, the mnemonic potential of language, its role in explanation and the potential of language to explain its own activities" (pp. 82–83), stating as well that syntax and phonology "lie close to the core of linguistic intelligence" (p. 85). Gardner cited poets and writers as possessing the highest levels of linguistic intelligence; he also mentioned the power of spoken language (e.g., political speeches) and nonverbal communication (e.g., gestures). Gardner's linguistic intelligence has been applied to foreign language teaching and learning (Arnold & Fonseca, 2004; Christison, 1996; Mahdavy, 2008) to increase TOEFL scores of students seeking admission to English-speaking universities. Gardner's definition of linguistic intelligence, however, does not capture the version of linguistic intelligence that this study has aimed to develop; it has served instead as a benchmark for this initiative.

Toward a New Perspective

A new definition is required to assess the linguistic intelligence of teachers who instruct ELLs. This redefined construct may also help pre- and in-service teachers to more readily reflect on what it means to be competent in preparing instruction for ELLs. An apparent gap exists in understanding what comprises the factors of high-level linguistic intelligence (LQ), while some aspects of LQ are already captured by the construct of cultural intelligence (CQ) (Van Dyne et al., 2012). The key belief is that teachers need to develop competency in a clearly defined LQ framework to understand and teach ELLs. It is hypothesized that LQ may enhance and/or embrace CQ; empirical research, however, does not exist to support this. Perhaps it may be possible to adapt what we already know about CQ to advance our understanding of LQ.

Cultural Intelligence (CQ)

Cultural intelligence (CQ)—the ability to effectively function in different cultural settings—is reviewed as a framework before describing how an LQ framework is developed for this study. Ng, Van Dyne, & Ang (2012) have spent almost a decade studying CQ, and it has been researched in many ways, including its relationship to emotional intelligence (Lin, Chen, & Song, 2012); international leadership potential (Kim & Van Dyne, 2012); CQ training and self-efficacy (MacNab, Brislin, & Worthley, 2012); and cultural adaptation, expatriate performance, and multicultural teamwork (Van Dyne et al., 2012). Thus far, however, CQ has not been assessed in relationship to teaching English to speakers of other languages (TESOL).

Research on CQ has looked at its development as a four-factor model (Van Dyne et al., 2012). The four-factor model informs that CQ comprises metacognitive CQ, cognitive CQ, motivational CQ, and behavioral CQ. Metacognitive CQ is a strategic factor that involves awareness of yourself and others, planning on how to approach a cultural situation, and checking the process of monitoring what you do and how it actually plays out in relationship to what you expect to happen. Cognitive CQ is a knowledge factor—i.e., one's actual knowledge about particular cultural issues and differences, including cultural norms. Motivational CQ is a drive factor, involving being interested, confident, and driven to adapt to another culture. Behavioral CQ is an action factor—individuals' ability to modify their verbal and nonverbal behaviors in order to interact with others from different cultural backgrounds. The components of CQ might improve the validity of the measure for use with pre-service and in-service teachers in training, which are used to develop an LQ framework.

Linguistic Intelligence (LQ)

A misleading assumption has existed about linguistic intelligence. Hymes describes "linguistic competence as just one kind of cultural competence" (cited in Byram, 1997, p. 8). In this study, our aim has not been to explore LQ as part of CQ, but actually the opposite. Our focus has been on helping teachers develop LQ, so they can assist ELLs in acquiring the target language, English. In general, however, teachers lack knowledge of language systems; they do not understand the benefits of valuing linguistic and cultural diversity; and they are not properly prepared to teach academic content to ELLs (Fillmore & Snow, 2002; González & Darling-Hammond, 1997). Teachers with ELLs need to receive more systematic and intensive preparation on what it means to possess and demonstrate LQ, which embraces linguistic, pedagogical, and cultural competencies. Measuring LQ may also provide the data for the TESOL program to revise the curriculum to enhance teachers' LQ.

Van Ek (1986) introduced a model of communicative ability with six competencies—linguistic, sociolinguistic, discourse, strategic, socio-cultural, and social—which emphasizes the role of the native speaker as a model for a learner. Nonetheless, similar to Ng et al.'s (2012) work, the authors believe that van Ek's model is useful in developing a new LQ framework. Outside of linguistic competence, the other five competencies consider the influence of socio-cultural aspects in developing communicative competence. We do believe that these six competencies hold the potential to be adopted in developing a new LQ framework, especially in regard to defining linguistic and sociolinguistic competence.

Lucas and Villegas (2010) designed a framework that "identifies the orientations, knowledge, and skills of linguistically responsive teachers" (LRT) (p. 301). Each of the elements represents a commitment made by teachers to become more aware and considerate of their ELLs and the challenges they face. Lucas and Villegas' LRT framework includes knowledge of languages, second language acquisition principles, ELLs' linguistic and cultural diversity, and sociolinguistic awareness. These are areas to potentially incorporate in the LQ framework, but with caution. Poyatos (1992) also identifies 10 dimensions of communication in which learners may encounter challenges. The first four of Poyatos' 10 dimensions—phonetics, morphology, syntax, and vocabulary— are tied to the linguistic competence of language teachers; the other six dimensions are paralanguage, kinesics, proxemics, chemical, body-adaptors, and built environments. Some of these dimensions appear to represent dimensions of cross-cultural norms that may also represent cross-cultural communication in theory and practice.

Proposed LQ Framework

Based on the LQ survey items, dictionary definitions, and related research (Byram, 1997; Fillmore & Snow, 2002; Lucas & Villegas, 2010; Poyatos, 1992; Van Dyne et al., 2012; van Ek, 1986), teachers' linguistic LQ has been defined and a corresponding LQ framework has been developed. Teachers' LQ is defined as the ability to appreciate and learn about other languages and pedagogies, and to function effectively with linguistically and culturally diverse learners in different settings (*Merriam-Webster Dictionary*, 2013). Similar to CQ, LQ is proposed to possess a four-factor model: a) linguistic competence (Lucas & Villegas, 2010; van Ek, 1986); b) pedagogical competence (Echevarria, Short, & Vogt, 2012; Pinker, 2003); c) valuing diversity (Byram, 1997; Lucas & Villegas, 2010; Van Dyne et al., 2012); and d) LRT behavior (Echevarria et al., 2012; Lucas & Villegas, 2010; WIDA, 2013).

The first LQ factor is *linguistic competence*. Linguistic competence refers to a teacher's cognitive knowledge and skills that enable him or her to understand language systems (phonology, syntax, and semantics), situated selection of language forms (sociolinguistics), principles of language acquisition, and cross-cultural norms. Teachers of ELLs must possess "the ability to produce and interpret meaningful utterances which are formed in accordance with the rules of the language concerned and bear their conventional meaning" (van Ek, 1986, p. 39). Teachers of ELLs need not only knowledge of linguistic signals and conventional meaning, but also need to be aware of the contextual and situational meaning depending on how certain language forms are selected. The teachers who have ELLs also need to have

knowledge of such cross-cultural communication (Gudykunst, 2003) as cross-cultural variances and verbal and nonverbal communication norms, in order to provide linguistically responsive teaching to ELLs (August & Hakuta, 1997).

The second LQ factor is *pedagogical competence*. Pedagogical competence refers to the knowledge of pedagogies that teachers must possess to provide effective teaching for ELLs. This factor is not about teaching performance, but about having knowledge of pedagogies—i.e., not a behavioral element, but a knowledge/competence element (Echevarria et al., 2012; Lucas & Villegas, 2010). Such knowledge (e.g., sheltered instruction, scaffolding, inquiry-based teaching, accommodating strategies, and assessment strategies) is essential for teachers to allow them to plan differentiated instruction for ELLs. Teachers may enhance their pedagogical knowledge of effective instructional models by participating in university TESOL courses and/or professional development (PD) workshops. Some examples of pedagogical competence include the knowledge of sheltered instructional observation protocol (SIOP), Kagan collaborative learning strategies, world-class instructional design and assessment (WIDA), backward instructional design, the reflective thinking cycle, and the guided coaching process.

The third LQ factor is *valuing diversity*. Valuing diversity includes having an understanding and appreciation of cultural and linguistic diversity (Lucas & Villegas, 2010). Cross-cultural consciousness or awareness, valuing linguistic and cultural diversity, advocating for ELLs, and learning about ELLs' backgrounds all underlie a teacher's basic drive to motivate ELLs. Knowledge of sociolinguistics and cross-cultural communication theories is an essential ingredient to increase teachers' levels of awareness concerning linguistic and cultural diversity (Gudykunst, 2003). Argyle posited one's "facial expression, gaze, body movement, posture, body contact, spatial proximity, and attire" as examples of nonverbal communication (as cited in Byram, 1997, p. 13). Poyatos (1992) reported that linguistically diverse behaviors include one's accent, intonation, verbal and nonverbal communication, vocabulary use, bookish grammar, code switching, and simplified writing (quoted in Byram, 1997). Cultural and linguistic diversity emphasizes that ELLs are monolithic, multilingual, and multicultural students with access to a diverse array of resources. Valuing ELLs' linguistic and cultural diversity is a potential motivator in their acquisition of academic and conversational English.

The fourth LQ factor is *Linguistically Responsive Teaching (LRT) behavior*. LRT behavior refers to the output actions delivered to ELLs by the teachers who recognize the diverse linguistic characteristics and needs of ELLs. Some examples of this include implementation of scaffolding and other forms of conscious and systematic instruction (e.g., using longer wait time, adjusting test time, incorporating meaningful resources, and capitalizing on one's first language as a valuable resource). LRT behavior is the factor that the teachers need to enact based on the other three factors, which prepare teachers' knowledge, skills, and attitude toward teaching ELLs with a multitude of resources and instructional and assessment pedagogical strategies. Some instructional models for LRT strategies include SIOP (Echevarria et al., 2012), Kagan's (2004) cooperative strategies, and Cummins' (2005) dual-language instruction using World-Class Instructional Design and Assessment (WIDA, 2013) to meet Common Core State Standards.

These four factors, like the CQ factors, are viewed both independently and interdependently. Valuing linguistic and cultural diversity holds the potential to motivate teachers to develop knowledge in linguistics, cross-cultural norms and variances, principles of second language acquisition, and other pedagogical competencies. If teachers do not value linguistic and cultural diversity or linguistic and pedagogical competency, they're unlikely to develop linguistically responsive teaching materials or activities that would motivate ELLs to succeed academically and overcome acculturative stress. Each of these four factors can hypothetically be acquired through PD and/or separate university courses. Table 1 summarizes CQ and LQ and their relationship to each other.

Table 1 *Framework of Linguistic Intelligence (LQ) and Cultural Intelligence (CQ)*

LQ	CQ
1. Linguistic Competence—Cognitive Knowledge Factor • Having knowledge of phonology, syntax, semantics, and pragmatics within the context of teaching ESOL • Having knowledge of principles of second language acquisition • Having knowledge of diverse cultural norms	1. Cognitive—Knowledge Factor • Having knowledge based upon the degree to which you understand the idea of culture and culture's role in shaping the way to interact with others across cultural contexts
2. Pedagogical Competence—Metacognitive Knowledge Factor • Applying particular linguistic theories and domains to academic and cultural issues that ELLs are faced with, e.g., adaptive/coping strategies such as Inquiry, Sheltered Instruction (e.g., SIOP), and Backward Design	2. Metacognitive—Strategic Factor • Applying particular theories and practices to cultural issues ELLs are faced with
3. Valuing Diversity/Motivation—Drive Factor • Being confident about linguistic and cultural diversity • Being interested in learning different cultures, and different nuances of a particular culture's language • Being enthusiastic about teaching ELLs and respect the different cultures and values	3. Motivational—Drive Factor • Being interested, confident, and driven to adapt to another culture, which is related to diversity training
4. Linguistically Responsive Teaching (LRT) Behavior—Action Factor • Implementing LRT behaviors such as wait time, adjusted testing time, using ELLs' L1, repetition of direction, using easier words before the target vocabulary, and so on • Being proactive in learning different language systems • Demonstrating adapted cross-cultural behaviors using cross-cultural communication norms	4. Behavioral—Action Factor • Modifying their verbal and nonverbal behaviors in order to interact with others from different cultural backgrounds

Methodology of Pilot Case Study

Two goals were proposed for this pilot case study. The first goal was to develop a framework for LQ, which has been described in the literature section above and summarized in Table 1. The second goal was

to report preliminary data on measures of teachers' LQ and CQ. The pilot case study employed a mixed-methods research design using a simple quantitative methodology and a qualitative case study to answer two hypotheses and one research question. First, data collected from a 29-item LQ survey (Appendix A) were administered to evaluate the two hypotheses using mean differences. Second, a preliminary seven-item interview protocol was developed and utilized with participants enrolled in a grant-funded TESOL training program (Appendix B). This was done to examine cohort teachers' perceptions of their levels of cultural and linguistic intelligence (LQ).

Participants

There were 33 participants who completed the CQLQ survey, and they were enrolled in grant-funded TESOL courses in spring 2013. Among them, 12 were pre-service and 21 were in-service teachers; six were male and 27 were female; three were African American, one was Asian, and 29 were Caucasian. Six participants—three in-service and three pre-service teachers—were selected using a purposeful sampling method to participate in the interview-protocol portion of the pilot case study. The in-service teachers comprised one teacher who had completed the grant-funded training and two new teachers who were also new to TESOL training. The pre-service teachers were one returning teacher-to-be and two new teachers-to-be. There were two males and four females; five were Caucasian and one was African-American. This type of sampling was considered appropriate because our aim as researchers was to reflect "the average person, situation, or instance of the phenomenon of interest" (Merriam, 2009, p. 78).

Researchers and Reflexivity Bias

The three-person research team was two doctorate students with training in qualitative and quantitative research design and methodology, and one TESOL professor; one doctorate student is pursuing a degree with a specialization in TESOL, and the other doctorate student is pursuing a degree in counselor education and supervision. These fields of study yielded a blend of vantage points throughout the research process. Two of the three researchers had a vested knowledge of the TESOL courses and grant activity as well as a relationship with research participants.

Because of the researchers' involvement with the participants, researcher bias could have existed. One strategy employed to limit researcher bias was reflexivity, which provided the research team with an opportunity to understand how their experiences and understandings might have affected the research process (Morrow, 2005). In order to deal with biases and assumptions stemming from experiences and/or in interactions with research participants, the researchers attempted to approach their endeavor reflexively (Hill, Knox, Thompson, Williams, Hess, and Ladany, 2005; Hill, Thompson, & Williams, 1997; Morrow & Smith, 2000). For this pilot case study, the researchers had ongoing discussions dedicated to evaluating the impact of their experiences and biases on the research project (e.g., acting as "devil's advocates" to each other) as part of research team meetings. Emerging self-understandings were then examined by coding the same data among three of them. Thereafter, researchers either decided to set aside data or consciously incorporate it into final data analysis.

Data Collection, Coding, and Analysis

The first part of the methodology involved LQ survey development by referencing Van Dyne et al.'s (2012) Cultural Intelligence Scale (CQS) as a foundational framework. After securing permission to use the CQS, modifications were made to it after several research team meetings. The newly developed LQ survey subsequently comprised four assessment areas: (a) linguistic competence, (b) pedagogical competence, (c) valuing diversity/motivation, and (d) linguistically responsive teaching behavior (Appendix A). The 33 participants who took part in the grant-funded TESOL courses completed the 29-item LQ survey. The results were analyzed using mean differences and the independent T-tests to answer the two proposed hypotheses given in the introduction to this paper.

For the second part of the methodology, a basic qualitative research design was selected to answer the research question, "How do participating teachers perceive their competence levels of LQ and CQ?" Grounded theory strategies were used to explain how the teachers interpreted their levels of knowledge and competence around CQ and LQ in their own words (Corbin & Strauss, 1990). This design consisted of open, axial, and selective coding, and the constant comparative method. In this study, each researcher transcribed his or her transcript verbatim consistent with a predetermined format. Line numbers were inserted in the left-hand margins of each page for quick reference during coding (McLellan, McQueen, & Neidig, 2003). Right-hand margins were used for coding and memos, and interviewer and participant text was labeled accordingly to differentiate between the two.

Qualitative data analysis began "as soon as the first bit of data [was] collected" (Corbin & Strauss, 1990, p. 6). In keeping with this recommendation, transcribed data was analyzed as each transcript became available one at a time. Initially, the researchers individually analyzed the transcripts using microanalysis/line-by-line coding to identify themes or concepts (Strauss & Corbin, 1998). The research team then convened to compare and contrast findings and to assign conceptual labels to data. The process of individual coding and meeting as a group to discuss findings was practical, as each research team member was involved in the grant-funded project in some specialized capacity. Once the concepts were identified, the data were continually questioned and compared for similarities and differences using the constant-comparative method (Corbin & Strauss, 1990; Strauss & Corbin, 1998). We believe that we were ultimately able to look at the data in ways that reached beyond preconceived notions or biases held prior to the analysis. This also assisted us in deciding which qualitative data points (i.e., which quotes to use) to highlight in this writing.

Results of Pilot Case Study

The quantitative results provided support to interpret the qualitative results about the perception of participating teachers' LQ and CQ. Our first hypothesis stated, "Significant differences from the LQ survey results will exist between the CQ and LQ of the participating teachers." There was, however, no statistical significance in the T-test. The mean difference between CQ and LQ indicated that the participating teachers (pre- and in-service) had higher CQ mean scores (X = 97.36) than LQ (X = 90.97). This could mean that the teachers were more aware of cultural intelligence than linguistic intelligence, due to their teacher education courses and/or professional development on multicultural education. The teachers in this study were not prepared to teach ELLs properly, and their teacher training programs did not require any TESOL course; this is why they were enrolled in the grant-funded project. Research on LQ is also scant.

Our second quantitative study hypothesis stated, "Significant differences from the LQ survey results will exist between the pre-service and in-service teachers." The 29-item survey data collected from the participants showed no statistical significance in the T-test. The difference of mean scores between CQ and LQ for pre-service teachers was greater than that for the in-service teachers; the mean difference between CQ and LQ for pre-service teachers was 10.08, and the mean difference for in-service teachers was 4.26. This may have been because the pre-service teachers had not been exposed to LQ, nor had they been required to take any course in their teacher education programs to prepare them for teaching linguistically diverse students. On the other hand, in-service teachers may have participated in related PD offered by their school districts, as many of them were employed in schools with a high percentage of ELLs.

For our qualitative research question, we asked, "How do participating teachers perceive their competence levels of linguistic and cultural intelligence?" Seven probing question items were utilized (see Appendix B). The first four items were about CQ; the next two items were about Gardner's (1983) multiple intelligences and his definition of LQ; and the seventh and last item was about our proposed four-factor model of LQ. Thus, six additional probing questions were asked to assess one's perceived competence levels of LQ (see Table 2).

Table 2 *Summary of Percentile Scores from Qualitative Interview Protocol Responses*

Participants' Group Responses (6)	**Percentage**
It is necessary to have cultural intelligence (CQ).	100
It is necessary to incorporate CQ into teacher training.	67
CQ is all that is needed to teach English language learners (ELLs).	67
CQ is not enough to be an effective TESOL teacher.	33
I have no knowledge of Gardner's multiple intelligences (MI).	83
I have knowledge of Gardner's definition of linguistic intelligence.	17
Participants perceived competence in other language systems.	
Very much	33
Some	17
No knowledge	50
Participants perceived competence with cross-cultural norms.	
Very much	33
Some	66
Participants perceived competence with pedagogy.	
Very much	17
Much	33
Some	17
No knowledge	33
Participants perceived competence with inquiry.	
Very much	50
Some	50
Participants perceived competence with SIOP.	
Very much	66
Much	17
No knowledge	17
Participants perceived competence with valuing CQ and/or LQ.	
Very much	50
Some	50
Participants perceived competence with LRT behaviors.	
Very much/much	100

Four interview questions (items 1–4 in Appendix B) were used to measure the six participating teachers' perceptions of CQ (Valuing Diversity Factor in Table 1). Responses to these questions varied widely, but participants indicated that they were generally proficient in CQ and believed that CQ was a necessary construct to employ. Two-thirds of the participants thought that it was necessary to incorporate CQ into teacher training and that CQ alone was all that was necessary to teach ELLs effectively. Conversely, one-third of the participants who had received more training in the TESOL program had higher self-perceived competency levels. They thought that CQ alone was not enough to teach ELLs and that more factors would be required of ELL teachers, including an understanding of pedagogy and language acquisition (see Linguistic and Pedagogical Competence Factors in Table 1). Responses to all seven items from individuals who had graduated from the TESOL program were generally more detailed (e.g., specific teaching scenarios were shared as examples). The following excerpt illustrates some of the more detailed perspectives:

> When I get ELLs in my classroom, I go back and learn about their cultures and language systems—how they write, how they read, how they live. Then, I foster the errors with coping strategies with the familiar resources the ELLs can relate to. I value that this [CQ] is something crucial that every teacher or soon-to-be teachers should have . . . in their bag of tools.

In regard to Gardner's (1983) definition of LQ, five of the six respondents indicated that they did not know about Gardner's multiple intelligences; the sixth respondent, who apparently knew more, said that she had "a little bit of knowledge" of linguistic intelligence but could not remember much about it. Overall, it appeared that the participating teachers knew little to nothing about Gardner's LQ, a construct that we have determined will have little utility in further defining LQ.

In order to retrieve preliminary data about LQ in conjunction with the four LQ factors—linguistic competence, pedagogical competence, valuing diversity, and Linguistically Responsive Teaching (LRT) behavior—the researchers asked five questions: two questions about linguistic and sociolinguistic competencies, one about pedagogical competence, one about valuing diversity, and one about linguistically responsive teaching behaviors (Appendix B). The participants answered with responses from four Likert scales: 1—"not at all," 2—"some," 3—"much," and 4—"very much." They were then asked to comment on each of the questions in greater detail.

The first question was "How much do you know about other language systems, such as phonology, syntax, and semantics?" This was asked to evaluate the linguistic competence knowledge factor (Table 1). One in-service program completer and one returning teacher said "very much," three of six new pre- and in-service teachers said "not at all," and one new in-service teacher said "some." A new pre-service teacher said, "I definitely know that I need a lot more training skills and tools"; one in-service program completer said, "I would give myself a 4 (very much), since I've been doing this for many years." In view of these responses. it seemed that those who had already taken the linguistic course and the second language acquisition course in the program had more self-perceived competence in other language systems, the first construct of our newly proposed LQ framework.

The second question was "How much do you know about cross-cultural norms like verbal and nonverbal communication norms?" This question was asked to evaluate sociolinguistic and/or cross-cultural communication knowledge competence, another part of the linguistic competence knowledge factor (Table 1). Four of six research participants said "some," and two of six (one in-service program completer and one returning pre-service teacher) said "very much." The returning pre-service teacher said, "We studied a lot about them in a sociolinguistic class—for example, certain cultures being more talkative than others." The participants who responded with "very much" appeared to believe that they possessed higher competence levels in understanding and applying cross-cultural norms to practice.

The third question was "How much do you know about the pedagogy of teaching ELLs?" It was asked to evaluate the pedagogical competence knowledge factor of LQ (Table 1). The interviewer referenced three specific areas of pedagogy—assessment, inquiry, and SIOP (Sheltered Instruction Observation Protocol). These were areas covered in the methods and practicum courses in the TESOL program. In the areas of assessment as a pedagogical strategy, one returning pre-service teacher said "some," one completed in-service teacher said "very much," two new pre-service teachers said "no knowledge at all," and two new in-service teachers said "much." A new in-service teacher said she had been actually getting trained on Common Core State Standards (CCSS). It seemed that the new in-service teachers might have equated their competence of assessment to their professional development in understanding CCSS. Similarly to these questions assessing competence in other language systems, it appeared that the level of training in the TESOL program may have affected a teacher's perception of pedagogical competence knowledge. One in-service program completer expressed that "I have been getting a lot of training in it at school and in the TESOL courses. [It's] a lot of the stuff I think I am implementing." In the area of inquiry, whereas pre-service teachers enrolled in the program said "some, but not really," in-service teachers said "very much." Unfortunately, however, the teachers did not add any additional comment in regard to this

area. When asked about SIOP, one returning pre-service teacher said "much," and one in-service program completer said "very much." She further shared that she had been using language and content objectives daily because of the TESOL trainings.

The fourth question was "How much do you know about values of cultural and linguistic diversity?" This question, which was asked to measure the valuing diversity factor of LQ (Table 1), included two areas of diversity—linguistic and cultural. In linguistic diversity, four of six participants said "very much," and the two new pre-service teachers said "some." They did not make any additional comments. In regard to cultural diversity, five of six participants said "very much," and one pre-service teacher said "some." This new pre-service teacher shared that "We start talking about cultural diversity when a person completely different from us comes in." A program completer said that she included all of the cultures in her teaching; for example, she asked the ELLs in her class to bring their native materials into the class and encouraged them to check books out from the library in their home language. She added, "The students, including the ELLs, get really excited about that." It appeared that the participants who experienced the TESOL training program became more aware of linguistic diversity in school settings as they tried to determine what would work best for their ELLs.

The fifth question was "How much do you know about linguistically responsive teaching (LRT) behaviors?" This question was asked to evaluate the LRT behavior factor of LQ (Table 1). The interviewer mentioned the LRT areas of "longer wait time, adjusted test-time, using L1, using cross-cultural knowledge, repeating directions, and using easier vocabulary." All of the participants interviewed (100%) responded "much" or "very much" to these items. This cannot be interpreted, however, that they indeed delivered lessons effectively in all of the areas, but only that they thought they did. For example, concerning wait time, one new in-service teacher said, "I think some of my experience working with my host family translated into wait time and cross-cultural knowledge when I teach." Yet, this supposition is rather irrelevant to "wait time" teaching strategy.

Concerning adjusted test time and error analysis, one participant said, "ELLs seemed relieved when I provided the extra time and explanation. ELLs do better with extended test time, with the extra explanation of the direction using easier vocabulary." Concerning use of L1, one program completer shared that her ELLs would tell the stories to classmates, and she allowed them to use their L1 with English subtitles. She also indicated that not only the ELLs but other students as well really became excited. The responses to this factor were favorable, but did not contain any specific anchors that would demonstrate use of LRT behaviors. The LRT factor is the area that cohort teachers may show more competence in with the evidence when they complete the grant project in December 2013.

Conclusion

The purpose of this study has been to take steps toward redefining linguistic intelligence to enable teachers to develop a better understanding of the term with specific constructs/factors, rather than Gardner's (1983) less clear version of linguistic intelligence. The new framework for LQ has been proposed as an extension of CQ, which has limited application to training teachers who have ELLs. These four factors are proposed as constructs of LQ: (a) linguistic competence, (b) pedagogical competence, (c)valuing diversity/motivation, and (d) linguistically responsive teaching behavior.

This study had two goals. The first goal was to develop teachers' LQ framework, and the second goal was to measure teachers' CQ and LQ through a preliminary pilot case study. The LQ framework has been drafted based on the research and expertise of the researchers, and this research endeavor will continue. Under the aim of the second research study goal, the study was conducted in two parts—one part consisted of a quantitative study with the two hypotheses, and another part was a qualitative study that made use of a semi-structured interview with six research participants. This two-part pilot case study has revealed that teachers who are participating in a government-funded TESOL training program perceived that they had more knowledge of cultural intelligence than linguistic intelligence, an emerging construct

in the field of TESOL. LQ is related to CQ, but it is distinctly different and more robust than Gardner's (1983) proposed LQ. Thus, the authors argue that there is not any added value in using items from Gardner's linguistic intelligence or multiple intelligences to improve either the interview protocol or new CQLQ survey. Nonetheless, further refinement of the interview protocol is necessary specific to the features of the four proposed factors. Other models that may be referenced include research by van Ek (1986), Byram (1997), and Lucas and Villegas (2010).

In-service teachers in particular scored higher in CQ than did pre-service teachers. Participants in the qualitative part of the study perceived that they lacked knowledge about LQ, including linguistic pedagogical knowledge; they thought, however, that they had a better understanding of valuing diversity and LRT behaviors. One participant who completed the training in its entirety and one who returned for training perceived that they had better knowledge of LQ in general than did teachers newly enrolled in the TESOL training program.

Limitations

One limitation of the study was sample size. A general consensus among qualitative researchers is that sample size is adequate when saturation is achieved (i.e., when no new concepts appear among the data) (Merriam, 2009). Six participants made up the sample for the preliminary study. While there was plenty of data from which to identify themes and categories, saturation of the data cannot be guaranteed. Data appearing to be outliers, for example, could be due to an insufficient number of participants to confirm or disconfirm these phenomena. In a study to determine the point of saturation, Guest, Bunce, and Johnson (2006) logged the appearance of each piece of information through data analysis to determine that 12 participants were sufficient to achieve saturation. In that particular study, however, findings were drawn from a homogeneous sample of participants who provided self-report data. More participants in this study would have potentially bolstered findings. Consequently, our findings should now now be viewed as tentative.

A second limitation of this study is related to the instrumentation of the interview protocol and the CQLQ survey. While questions for both instruments were constructed based on current literature, the instruments might have been further improved if additional assessment experts of TESOL had reviewed them.

Future Directions

The current report has described both an LQ framework and a pilot case study. Replication studies may include pre- and post-test measurement of teachers' LQ before and after TESOL program training and future professional development activities, which is a part of the research agenda of this grant research project. Observation data could also be included to assess if participating teachers actually demonstrate LQ in various classroom settings; in addition, adding a control group would be another way to research the aforementioned hypotheses and research questions. The LQ framework may also be revisited to add a dynamic multidimensional cycle to each proposed construct. This has been a preliminary report, and further empirical research will be carried out throughout the grant period (2012–2016). With the stated limits in this pilot case study, it still contributes to the measurement of teachers' linguistic intelligence (LQ).

References

Argyle, M. (1983). *The psychology of interpersonal behavior.* Harmondsworth: Penguin Books.

Arnold, J., & Fonseca, M. C. (2004). Multiple intelligences theory and foreign language learning: A brain-based perspective. *International Journal of English Studies, 4*(1), 119–136.

August, D., & Hakuta, K. (1997). *Improving schooling for language-minority children*. Washington, DC: National Academy Press.

Byram, M. (1997). *Teaching and assessing intercultural communicative competence.* Bristol, PA: Multilingual Matters Limited.

Christison, M. A. (1996). Teaching and learning languages through multiple intelligences. *TESOL Journal, 6*(1), 10–14.

Corbin, J., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology, 13*(1), 3–21.

Cummins, J. (September 2005). *Teaching for cross-language transfer in dual language education: Possibilities and pitfalls.* Paper presented at Bobazici University in Istanbul, Turkey.

Echevarria, J., Short, D., & Vogt, M. (2012). *Implementing the SIOP model through effective professional development and coaching.* Boston, MA: Allyn & Bacon.

Fillmore, L. W., & Snow, C. E. (2002). What teachers need to know about language. In C. T. Adger, C. E. Snow, & D. Christian (Eds.), *What teachers need to know about language* (pp. 7–54). McHenry, IL: Delta System Inc.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: Perseus.

González, J. M., & Darling-Hammond, L. (1997). *New concepts for new challenges: Professional development for teachers of immigrant youth.* Washington, DC: Delta Systems and Center for Applied Linguistics.

Gudykunst, W. B. (Ed.). (2003). *Cross-cultural and intercultural communication*. London: Sage Publications.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods, 18*(1), 59–82.

Halliday, M. (1975). *Learning how to mean: Explorations in the development of language*. New York: Elsevier.

Hill, C. E., Knox, S., Thompson, B. J., Williams, E. N., Hess, S. A., & Ladany, N. (2005). Consensual qualitative research: An update. *Journal of Counseling Psychology, 52,* 196–205.

Hill, C. E., Thompson, B. J., & Williams, E. N. (1997). A guide to conducting consensual qualitative research. *The Counseling Psychologist, 25*(4), 517–572. doi: 10.1177/0011000097254001

Hymes, D. (1972). Models of the interaction of language and social life. In J. Gumperz & D. Hymes (Eds.), *Directions in sociolinguistics: The ethnography of communication* (pp. 35–71). New York: Holt, Rinehart, Winston.

Kagan, S. (2004). *Cooperative meetings: Transforming teachers and schools.* San Clemente, CA: Kagan Publishing.

Kim, Y. J., & Van Dyne, L. (2012). Cultural intelligence and international leadership potential: The importance of contact for members of the majority. *Applied Psychology: An International Review, 61*(2), 272-294. doi: 10.1111/j.1464-0597.2011.00468.x

Lin, Y., Chen, A., & Song, Y. (2012). Does your intelligence help to survive in a foreign jungle? The effects of cultural intelligence and emotional intelligence on cross-cultural adjustment. *International Journal of Intercultural Relations, 36*, 541–552.

Lucas, T., & Villegas, A. M. (2010). The missing piece in teacher education: The preparation of linguistically responsive teachers. *National Society for the Study of Education, 109*(2), 297–318.

MacNab, B., Brislin, R., & Worthley, R. (2012). Experiential cultural intelligence development: Context and individual attributes. *The International Journal of Human Resource Management, 23*(7), 1320-1341. doi: 10.1080/09585192.2011.581636

Mahdavy, B. (2008). The role of multiple intelligences (MI) in listening proficiency: A comparison of TOEFL and IELTS listening tests from an MI perspective. *Asian EFL Journal.* Retrieved from http://www.asian-efl-journal.com/September_08_bm.php. doi: 10.1080/09585192.2011.581636

McLellan, E., MacQueen, K. M., & Neidig, J. L. (2003). Beyond the qualitative interview: Data preparation and transcription. *Field Methods, 15*(1), 63–84.

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco: Jossey-Bass/Wiley.

Merriam-Webster Dictionary. (2013). Definition of *intelligence*. Retrieved from http://www.merriam-webster.com/dictionary/intelligence

Morrow, S. L. (2005). Quality and trustworthiness in qualitative research in counseling psychology. *Journal of Counseling Psychology, 52*(2), 250–260. doi: 10.1037/0022-0167.52.2.250

Morrow, S. L., & Smith, M. L. (2000). Qualitative research for counseling psychology. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (pp. 199–230). Hoboken, NJ: John Wiley & Sons Inc.

National Center for Educational Statistics. (2012). *Fast facts*. Retrieved from http://nces.ed.gov/fastfacts/display.asp?id=96

Ng, K.Y., Van Dyne, L., & Ang, S. (2012). Cultural intelligence: A review, reflections, and recommendations for future research. In A. M. Ryan, F. T. Leong, & F. L. Oswald (Eds.), *Conducting multinational research: Applying organizational psychology in the workplace* (pp. 29–58). Washington, DC: American Psychological Association.

Pinker, S. (2003). *The language instinct: The new science of language and mind*. New York: Penguin Books Ltd.

Poyatos, F. (1992). The interdisciplinary teaching of nonverbal communication: Academic and sociocultural. In F. Poyatos (Ed.), *Advances in nonverbal communication: Sociocultural, clinical, esthetic, and literary perspectives* (pp. 363–197). Philadelphia, PA: John Benjamins Publishing Company.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.

Van Dyne, L., Ang, S., Ng, K. Y., & Koh, C. (2012). Sub-dimensions of the four-factor model of cultural intelligence: Expanding the conceptualization and measurement of cultural intelligence. *Social and Personality Psychology Compass, 6*(4), 295-313. doi: 10.1111/j.17519004,2012,00429.x

van Ek, J. A. (1986). *Objectives for foreign language learning. Volume I: Scope*. Croton, NY: Manhattan Publishing Company.

WIDA. (2013). More than English: Teaching language and content: English language development standards, World-Class Instructional Design and Assessment (WIDA). Retrieved from http://morethanenglish.edublogs.org/for-teachers/wida-English-language-development-standards/

Appendix A

Cultural and Linguistic Intelligence Scale (LQ) Survey Items

Instructions: Select the response that best describes your capabilities. Circle one number for each statement that

BEST describes you AS YOU REALLY ARE (1 = strongly disagree; 7 = strongly agree).

Section 1: Cultural Intelligence—Strategy
1a. I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
1b. I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.
1c. I am conscious of the cultural knowledge I apply to cross-cultural interactions.
1d. I check the accuracy of my cultural knowledge as I interact with people from different cultures.

Section 2: Linguistic Intelligence—Strategy
2a. I am conscious of the linguistic knowledge I use when interacting with people with different language backgrounds.
2b. I adjust my linguistic knowledge as I interact with people who have a language that is unfamiliar to me.
2c. I am conscious of the linguistic knowledge I apply to cross-cultural interactions.
2d. I check the accuracy of my linguistic knowledge as I interact with people who speak different languages.

Section 3: Cultural Intelligence—Knowledge
3a. I know the legal and economic systems of other cultures.
3b. I know the cultural values and religious beliefs of other cultures.
3c. I know the marriage systems of other cultures.
3d. I know the arts and crafts of other cultures.

Section 4: Linguistic Intelligence—Knowledge
4a. I know the linguistic rules of other languages.
4b. I know the norms for using non-verbal behaviors in other cultures.

Section 5: Cultural Intelligence—Motivation
5a. I enjoy interacting with people from different cultures.
5b. I am confident that I can socialize with locals in a culture that is unfamiliar to me.
5c. I am sure I can deal with the stresses of adjusting to a culture that is new to me.
5d. I enjoy living in cultures that are unfamiliar to me.
5e. I am confident that I can get accustomed to the shopping conditions in a different culture.

Section 6: Linguistic Intelligence—Motivation
6a. I enjoy interacting with people who speak different languages
6b. I am confident that I can communicate with locals where they speak a language that is unfamiliar to me.
6c. I am sure I can deal with the stresses of adjusting to a language that is new to me.
6d. I enjoy experiencing and learning language that is unfamiliar to me.
6e. I am confident that I can get accustomed to the nuances of a language used in a different culture.

Section 7: Cultural and Linguistic Intelligence—Behavior
7a. I change my verbal behavior when a cross-cultural interaction requires it.
7b. I use pause and silence differently to suit different cross-cultural situations.
7c. I vary the rate of my speaking when a cross-cultural situation requires it.
7d. I change my non-verbal behavior when a cross-cultural interaction requires it.
7e. I alter my facial expressions when a cross-cultural interaction requires it.

Scoring Process

1. Total Cultural Intelligence—add sections 1, 3, 5, and 7.
2. Total Linguistic Intelligence—add sections 2, 4, 6, and 7.
3. Total Cultural and Linguistic Intelligence—add sections 1, 2, 3, 4, 5, 6, and 7.

Appendix B

LQ Semi-Structured Interview Protocol

1. What do you know about cultural intelligence/competence/culturally responsive teaching? (CQ)
2. Do you think it is necessary for teachers to have knowledge and skills of cultural intelligence? (CQ)
3. Have you incorporated culturally responsive teaching in your classroom? (CQ)
4. Do you think cultural IQ alone is enough for teachers to prepare coping strategies for ELLs? (CQ)
5. What do you know about Gardner's multiple intelligences? (MI)
6. What about Gardner's linguistic intelligence? (LQ)
7. Share your knowledge of linguistic intelligence in the areas of (1 to 4, 1 for "not at all," and 4 for "very much") (LQ)
    a. Knowledge of applied linguistics and cross-cultural norms (1. Linguistic Competence Factor)
        i. Linguistics (phonology, syntax, morphology, semantics)
        ii. Sociolinguistics (cross-cultural communication)
        iii. Second Language Acquisition (SLA) (Natural approach, five hypotheses, error analysis)
    b. Pedagogy of teaching academic language (Classroom discourse)—(2. Pedagogical Competence Factor)
    c. Valuing linguistic and cultural diversity (3. Diversity Factor)
    d. Linguistically Responsive Teaching (LRT) delivery behaviors with differentiated instructional strategies (4. LRT Action Factor)
        i. Wait time
        ii. Adjusted test time
        iii. Using L1
        iv. Using L1 language knowledge to analyze ELLs' errors
        v. Using cross-cultural knowledge
        vi. repeating the direction using easier words for ELLs

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