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Editors’ Notes

This issue of the *Pacific Educational Research Journal* (PERJ) is a pinnacle milestone for the Pacific research community. Technology is a change agent for the world and now it is a change agent for PERJ; Researchers no longer need to submit three hard copies of their manuscripts, contributing editors no longer need to hand write their reviews and meet with the editor face to face, readers no longer need to mail a check to receive a hard copy of the issue. The significance of these actions is complex, and with the convenience of technology comes caution and responsibility.

Education practitioners are required to be more discerning than ever when choosing pertinent research. Due to the ease of electronic publishing and robust databases, there is an inexhaustible amount of research available to previously isolated and remote communities. More does not mean better, finding quality research is similar to finding a needle in a haystack. The *Pacific Educational Research Journal* continues to commit to selecting meaningful, reliable and valid research in regards to the Pacific region.

The constraint of caution does not limit the overwhelming power that technology affords research in previously inaccessible cultures. It is overwhelming and heartwarming to learn of the unique research findings specific to rich, exclusive populations. The generalizability of research is limited and the unique characteristics in the Pacific continue to require focused attention. In this issue, the *Pacific Educational Research Journal* continues its tradition to collaborate with diverse, marginalized communities and share results to unique questions.

*April GardnerTaylor*
A Validity Study of the Reading Subskills: Measured by the 2002 Hawai‘i State Assessment Grade 8 and Grade 10 Reading Tests

Russell Uyeno and Shuqiang Zhang
University of Hawai‘i at Mānoa

An important part of the validation of large-scale, standards-based testing concerns the relationship between the content standards that underlie the structure and content of a test, and the scores obtained in actual test administrations. The Grade 8 and Grade 10 reading scores of the 2002 Hawai‘i State Assessment (HSA) test were analyzed using structural equation modeling to empirically evaluate the alignment of test questions with the three-component model of reading ability that underlies the test structure. The results did not support the given model of reading ability; indeed, this model possessed no statistical advantage over a random three-component model and a single-component model. The results of this study support the view that reading ability may be more accurately assessed as a single, unidimensional skill on large-scale tests.
standardized, large-scale testing has become a key feature of educational assessment in every state (Tindal, 2002). The idea that such tests should be based on, and aligned with, clear standards of what students should know and how well they should perform, has been widely embraced by states and educational jurisdictions, educational organizations, and other stakeholders as the most promising way to improve not only educational assessment but the educational system in general (Rothman, Slattery, Vranek, & Resnick, 2002). It has been noted that the educational reform movement based on the adoption of standards “has increased the amount of testing in K-12 schools and raised the consequences, expectations, and controversies attached to test results” (Pellegrino, Chudowsky, Glaser, & National Research Council (U.S.). Division of Behavioral and Social Sciences and Education. Committee on the Foundations of Assessment., 2001, p. 24). Standards-based testing (SBT) proponents argue that, properly constructed and interpreted, SBT holds much promise for improving the quality of assessment information for all those concerned with school education (Linn, 2002a). It has been pointed out, however, that the rapid adoption of SBT has proceeded without a commensurate base of empirically grounded validity research. As Kifer (2001) observes, “It is, of course, difficult to argue against standards and even more difficult to be against high standards. . . . Yet, there are serious technical, conceptual, and pragmatic issues surrounding standards-based assessments” (p. ix).

This study focuses on issues related to the content standards underlying the competency broadly understood as reading ability. What “reading ability” actually denotes as a theoretical concept, and how it can best be measured with a standardized instrument, are questions that continue to find various answers in the theoretical literature and in the design of large-scale assessments. In this study, we assess the extent to which scores from a standardized, state-wide test provide empirical support for the concept of reading ability as consisting of three discrete and measurable sub-skills, or “strands” – a concept that underlies both the test structure and score reporting. The need for such empirical scrutiny of test results is clearly set forth in the Standards for Educational and Psychological Testing (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999; Linn, 2002b). It should be noted that this study does not address the question of whether or not large-scale assessments should be based on content standards; this question would involve a much wider discussion of testing contexts and uses than is offered here. Rather, our focus is on the degree to
which a specific content standard is empirically supported by test results. This more limited inquiry remains relevant, because as states and districts adopt standards-based accountability systems the delineation of standards in content areas will likely have a major impact on curriculum design and instruction. Further, the use of standards to assess student performance and diagnose areas of strength and weakness means that a construct such as reading ability will be defined, for all intents and purposes, by the scores (and subscores) that each student earns.

**Literature Review**

**Background on the HSA Reading Test**

This study is based on the reading scores from the first administration (in 2002) of the Hawai‘i State Assessment (HSA), a large-scale, standards-based test designed to measure student achievement in math and reading in selected grades of the public school system of Hawai‘i, which is administered by the Hawai‘i Department of Education (DOE). The content standards underlying the HSA resulted from the culmination of process that began with the creation of the Hawai‘i Commission on Performance Standards by the Hawai‘i State Legislature in 1991 (Hawai‘i Department of Education Office of Accountability and School Instructional Support/School Renewal Group, 1999; Hawai‘i State Performance Standards Review Commission, 2003). The reading standards are organized into three “strands”—Comprehension Processes, Conventions and Skills, and Response and Rhetoric—that designate skills or capabilities that good readers possess (Hawai‘i Department of Education Office of Curriculum Instruction and Student Support / Instructional Services Branch, 2003, p. 12). Students received a total reading score and subscores for each of these three reading strands. The student’s total score was used to place the student into one of four standards-based performance or proficiency levels: (a) well below proficiency, (b) approaches proficiency, (c) meets proficiency, and (d) exceeds proficiency (Hawai‘i Department of Education, 2003). Test items varied by response format (both multiple-choice and open-ended) and by the genre of the reading passage used to elicit responses (literary, informational, and functional). Table 1 summarizes the 2002 HSA Reading test items by grade and componentstrand categories.

The rationale for the HSA reading standards is presented in the DOE’s Curriculum Framework for Language Arts (Hawai‘i Department of Education Office of Curriculum Instruction and Student Support / Instructional Services
Branch, 2003), which provides the broader context for understanding the HSA reading standards as the foundation for “curriculum, instruction, and assessment,” all of which “are connected and must be aligned” (p. viii). The reading content standards, as well as those of the other subject areas of the language arts, were developed according to five guidelines adopted from the U.S. Department of Education and the Council of Chief State School Officers (Hawaiʻi State Auditor, 2001). An evaluation report on the HSA (Hawaiʻi State Auditor, 2001) indicated that the model was developed with reference to standards and tests used in other states that had been deemed to be exemplars in setting content standards in the area of language arts. The report relied on several studies of reading standards, including those by the Council for Basic Education (Patton & Holmes, 2002), the Fordham Foundation (Stotsky, 1997), and the American Federation of Teachers (American Federation of Teachers, 2001), to assess the soundness of the HSA standards. The specific theoretical basis of, and empirical evidence for, the model of reading ability embodied in the HSA is not presented in the available literature.

Psychometric Evidence of Components from Large-Scale Tests

Empirical support for reading components has generally been based on evidence from multiple measures of reading ability (Cain, Bryant, & Oakhill, 2004; Cunningham, Stanovich, & Wilson, 1990; Hannon & Daneman, 2001; Rupley, Willson, & Nichols, 1998). Studies of reading components that have looked primarily at student performance on large-scale tests have been less successful at isolating any components distinguishable from those that can be characterized as representing general cognitive ability or text characteristics (Buck, Tatsuoka, & Kostin, 1997; Schedl, Gordon, Carey, & Tang, 1996).

Li, Ford, and Tompkins (1999) looked at the stability of content area scores between third- and fifth-graders taking the Maryland School Performance Assessment Program, and found evidence that was more consistent with a general measure of student ability, rather than with specific content areas. Li (2001) looked at longitudinal true-score correlations between content areas of the Maryland test and the Comprehensive Test of Basic Skills (CTBS), and found more evidence to support the construct validity of the content areas, although more so for the multiple-choice CTBS test than for the Maryland test. In a study of the Washington state assessment (MacQuarrie, 2003), the author found moderate correlations between scores on the standards-based reading tests and norm-referenced tests given in the year prior, providing some criterion validity for the content standards. Perkins and Pohlmann
(2002) looked at response patterns on an English as a Second Language (ESL) reading comprehension and found no psychometric evidence of restructuring of knowledge structures, as might be expected from growing competence in reading.

Thus, designing and using large-scale tests based on reading models that include subskills or components raises a series of questions: (a) Are components of reading discrete and, thus, separately testable? (b) Do they exist in a hierarchical relationship, with proficiency in “higher order” skills indicating (and dependent on) mastery of “lower order” skills? (c) To what extent does the measurement of these components depend on text characteristics, such as the format, subject matter, and authenticity of the test question? A review of several large state-level educational testing programs indicates that there is a lack of consensus on how to best understand and measure student reading ability (Florida Department of Education, 2001; Massachusetts Department of Education, 2001; Texas Education Agency, 2003; Washington Office of Superintendent of Public Instruction, 2000). The National Assessment of Educational Progress (NAEP) reading assessment classifies test questions into four “aspects” of reading: (a) forming a general understanding, (b) developing interpretations, (c) making reader/text connections, and (d) examining content and structure. These aspects explicitly designate discrete abilities, where “successfully mastering one aspect may not depend on successfully mastering any other aspect” (National Assessment Governing Board, 2003). Alderson (2000) has suggested that this diversity of reading models and assessment practices reflects basic problems with existing taxonomies of reading components or subskills, including their reliance on expert opinion and induction rather than empirical evidence, their lack of clear definition, difficulties in linking them test items, and an inability to discern them in analyses of test performance.

Other researchers question efforts to assess reading components because they are simply too tightly integrated or difficult to measure in order for meaningful assessment to make use of them. Schwartz (1984), for example, notes that reading subskills tend to be “fairly broad” and “highly intercorrelated,” and hence argues that “the possibility that there is only one general skill involved in comprehension or reasoning cannot at present be rejected” (p. 87). Alderson (1990) conducted a study in which expert judges were asked to identify and agree upon the reading skills that various test questions were assessing, and found that there was little agreement among the judges. On the basis of this evidence, he argued that “even if there are separate skills in the reading process which one could identify by a rational process of
analysis of one’s own reading behavior, it appears to be extremely difficult if not impossible to isolate them for the sake of testing or research” (p. 436, cited in Alderson, 2000, p. 49).

**Construct Validation of Large-Scale, Standards-Based Tests**

The Standards for Educational and Psychological Testing (American Educational Research Association et al., 1999) emphasizes that validity is “the most fundamental consideration in developing and evaluating tests” (p. 9). Geisinger (1992) argues that content- and criterion-related validation provide key support for broader construct validation efforts, especially with respect to tests in which “the domain delineations and definitions of success [are] determined by expert judgments.” This point is particularly relevant to an analysis of a test like the HSA where the content standards and the test items are developed through a process of expert opinion and review. Messick’s (1989) discussion of validity provides an extensive argument for basing validity assessments on the uses of test scores. Linn (2002a) analyzes changing conceptions of content areas and the manner in which performance standards are implemented in tests of those areas. Validity issues relating to the use of test scores for normative and curriculum-specific assessment explored in Linn and Hambleton (1991) are relevant to the HSA, which is designed to provide both normative and curriculum-specific information to parents and educators. The many potential threats to validly drawing both normative and standards-based conclusions from the same data at the national level are discussed by Linn (1998). Linn and Hambleton (1991) note that making valid inferences from large-scale tests is complicated by the many purposes for which such tests are designed, and that the practical demands for testing efficiency raise a fundamental question: “Can a test serve multiple purposes and retain an adequate level of validity for each purpose?” (p. 194).

An important aspect of validity investigations within a standards-based paradigm is alignment: the extent to which the test items themselves accurately represent the standards that test-takers are being measured against. “For accurate inferences to be made about student achievement and growth over time, these [standards-based] assessments must measure the knowledge and skills deemed valuable and described in policy documents such as state content standards. From this perspective, alignment has both content and consequential validity implications” (Bhola, Impara, & Buckendahl, 2003, p. 21). Bhola et al. (2003) review four models of assessing the degree and quality of alignment between test and standards, and adapt Webb’s (1997) model in their study of
the reading/writing and mathematics content standards of Nebraska’s statewide test. The alignment models discussed in Bhola et al. (2003) provide a useful context for thinking about how test items can be analyzed in terms of how they represent both the breadth of the content area and the depth of thinking by the test taker. In a comprehensive review of elementary school level reading standards of all fifty states, Wixon, Fisk, Dutro, and McDaniel (2002) found that alignment was interpreted quite differently by different states. Although the processes used by the states in aligning standards with tests were fairly clear-cut, assessing the extent of alignment was complicated by a variety of differing interpretations of adequate coverage of standards.

Methods

Data Used for the Analyses

The Hawai‘i public school system consists of a single, statewide district with 285 schools spread over seven islands, serving about 181,000 students. The data used for this analysis includes the results of the HSA test administered statewide in spring 2002 to students in grades 8 (N=10,620) and 10 (N=9,068). This analysis excludes records that were unusable (incomplete or invalidated tests) or inappropriate for inclusion in the analysis (due to special testing circumstances). The SAS System version 8.2 (SAS Institute Inc., 1999-2001) was used for all of the statistical analyses.

Research Question

Do the HSA scores provide evidence that reading ability, as measured by the HSA reading test, comprises the three reading components, or strands, identified by the DOE? For the HSA measurement of reading strands to be theoretically reasonable and diagnostically useful, the data should indicate that items comprising each strand behave differently from those in the other strands; that is, responses should demonstrate that the strands reflect sufficiently discrete aspects of reading. Any such patterns of responses should be evident in a covariance or correlation matrix of the items, which displays the covariance/correlation between each item and every other item.

Statistical Analysis

There are two models that can be reasonably inferred from the available source material regarding the theoretical structure of the reading strands. These models are conceptually similar, but the statistical analyses used to test them
differ slightly. In the first model, designated as the one-tier model, the three strands are interrelated components of reading. Each component influences, and is influenced by, the others, and there is no hierarchical relationship among them; no single component determines the others. In the second model, designated as the two-tier model, the three strands are subcomponents of a general reading ability. The three strands are thus related to each other through this general ability, rather than directly with each other.

Our method for addressing this research question was as follows:

1. One-tier and two-tier models based on the given strand-item alignments (as specified by the DOE) were evaluated for fit with the data.

2. If the models did not meet the desired criteria, items found to have unusually low loadings on their strands were subjected to further tests to determine if there was sufficient evidence to warrant their exclusion from further analyses of model fit. If any such “bad” items were identified, the DOE models were tested again without those items.

3. Further tests of possible item unidimensionality were conducted:
   a. A model with a single component (one general reading factor) was tested.
   b. Subsequently, a set of “random assignment” models was created for testing. For each of these models, test items were randomly assigned to the three strands by creating a random sequence of the items, which were then simply distributed in that order to the three strands while retaining the original number of items per strand. These three models were tested twice: once within the one-tier structure, and again within the two-tier structure.
   c. Finally, a “rotated assignment” model was tested within both the one-tier and two-tier structures. This model was created by successively assigning each item to each of the three strands. In effect, this rotated assignment model is a variation on the random assignment models described in paragraph (b), but without retaining the original number of items per strand.

In selecting the fit indices to evaluate the tested models, we were mindful of the fact that there is a lack of consensus on the questions of which fit indices are best to use in confirmatory factor analysis, and on the values that indicate good model fit (Maruyama, 1998; Thompson, 2000). Helpful classification schemes provided some guidance on the appropriate use of indices (Byrne, 1998; Loehlin, 2004; Maruyama, 1998). We selected the following indices for
this study: the comparative fit index (CFI), which is a measure of fit that adjusts for, and is applicable to, samples of any size (Hatcher, 1994); the non-normed fit index (NNFI), which compares the tested model to a hypothetical model of no fit, but also accounts for the complexity (or, conversely, the parsimony) of the tested model (in terms of the number of parameters) (Bentler & Bonett, 1980, cited in Maruyama, 1998); and the ratio of chi-square to degrees of freedom ($\chi^2/df$) (Hatcher, 1994). The $\chi^2$ significance test was used only cautiously to assess model fit due to its sensitivity to sample size (Thompson, 2000).

Results

The results of all of the tested models for grades 8 and 10 are presented in Table 2, and can be summarized as follows:

With respect to the DOE models, for both grades the CFI and NNFI fit indices indicated reasonable fit; they approached, but did not reach, the .90 threshold that is generally used to indicate adequate model fit. The $\chi^2/df$ ratios suggested relatively poor fit based on “rule-of-thumb” guidelines, although as noted above this is expected from any index based on the chi-square statistic, which is strongly influenced by sample size.

Subsequent examination of the loading of each item on its respective strand indicated that four items in the Grade 8 test might be disproportionately weakening model fit. Parsing these four “bad” items from the Grade 8 model tests resulted in positive, but negligible, improvements (ranging from .002 to .003) to the CFI and NNFI indices; thus, the fit of the DOE models remained moderate for both grades. Attention was then directed towards the high inter-factor correlations among the strands in the one-tier DOE model (ranging from .91 to .97), and the high loadings between each strand and the general reading factor in the two-tier model (ranging from .93 to .99) that emerged from the fit tests, and which strongly suggested that the reasonable fit indices might have resulted from shared variance among the strands. This was confirmed by the tests of the random and rotated assignment models, as well as a single-factor model (for the one-tier model), all of which yielded fit indices and inter-factor correlations that were virtually identical to those of the DOE models.

The substantial equivalence of the tested models, and the lack of sensitivity of the factors to the items that they consist of, is apparent by examining the narrow range of values for each fit index. Across all models tested for Grade 8, the CFI ranged from .85-.86, the NNFI ranged from .84-.85, and the $\chi^2/df$ ratio ranged from 12.72 to 13.26. For Grade 10, the CFI ranged from .81 to
The NNFI ranged from .80 to .82, and the $\chi^2$/df ratio ranged from 10.30 to 11.46. The substantial equivalence of the models is also evident in the inter-factor correlations among the three strands in the one-tier models, and between each of the strands and the hypothesized general reading factor in the two-tier models. For Grade 8, the inter-factor correlations among the three strands in the one-tier models ranged from .91 (between the Conventions and Skills and Response strands as originally composed) to 1.00; for the two-tier models, the standardized loadings of the strands on the general reading factor ranged from .93 to 1.00. For Grade 10, the inter-factor correlations among the three strands in the one-tier models ranged from .93 (again, between the Conventions and Skills and Response strands as originally composed) to 1.00; for the two-tier models, the standardized loadings of the strands on the general reading factor ranged from .95 to 1.00. These inter-correlations and loadings indicated each of the strands shared at least 80 percent of its variance with the others.

Overall, the results indicate that whether reading ability is operationalized as a single factor, as three inter-related factors, or as three factors subsumed under an overarching single factor, the HSA reading data support these models equally. Furthermore, the substantial equivalence of the eight alternative models in which items were randomly assigned to the three factors (three randomized plus one rotated assignment model for both the one-tier and two-tier structural models) indicate that strength of the fit indices did not depend on the proper alignment of test items with strands. Instead, the results indicate that models containing arbitrary assignments of test items to strands are comparable, if not identical, to each other and to the DOE models in terms of their fit of the data. Correlations among the strands indicate substantial shared variance among them. Given these results, the single-factor model is the most parsimonious solution. Thus, the data support a single-component or unidimensional model of reading.

**Discussion**

**Alignment and Reading Strands**

In light of the Standards for Educational and Psychological Testing (American Educational Research Association et al., 1999) the findings concerning reading strands have significant implications for the interpretation and use of the HSA test scores. Specifically, the data do not support the three-component model of reading ability upon which the division of a student’s total reading score into subscores indicating performance on each of the strands is
based. The results suggest that a unitary concept of reading ability is a more parsimonious and appropriate representation of the construct that the HSA Reading test is measuring. The lack of clear evidence in support of the DOE reading strands model of reading ability suggests that any interpretation of a student’s reading ability beyond his or her total score must be approached with great caution. In particular, the use of strand subscores for diagnostic purposes, as indicated by the reporting narratives designed to explain to teachers, parents, and students what a low subscore in each strand means (Hawai‘i Department of Education, 2003) and how the student can improve performance on that strand, is not supported by the evidence here.

The limited psychometric evidence for the DOE’s three reading strands is consistent with the general difficulty that researchers have had in finding evidence for content areas in large-scale tests. In a recent analysis of the TerraNova Comprehensive Test of Basic Skills/5 (Stevens & Zvoch, 2007), the results of a confirmatory factor analysis similar to the one used here indicated that the specific content areas being measured by the test were not represented in the test structure. The authors note that their results “raise questions about the differentiation among subtest scores as well as how scores should be used and interpreted” (p. 976); further, the authors note that although empirical evidence from large-scale tests is vital to the valid use of content areas scores (and subscores), such evidence is difficult to find in the published literature (p. 977).

Possible Methodological Issues and Limitations

Studies of the dimensionality of test data using methods based on correlation matrices have been found to produce varying results, perhaps in part due to the characteristics of the data (DeMars, 2003). In this respect, the non-normal distribution of the HSA test results—where multiple-choice items were scored zero (incorrect) or one (correct), and constructed-response items were scored on a 0-3 or 0-4 scale—was considered as a potential source of weakness in the analysis. For this study, however, violations of data normality were tolerated because the particularly large sample sizes on which the analyses were based provide a degree of robustness to the results (Loehlin, 2004). Faced with data characteristics like those of the HSA, researchers have sometimes used parceling to improve the characteristics of variables for structural equation modeling and confirmatory factor analyses (Bandalos, 2002; Little, Cunningham, Shahar, & Widaman, 2002; Nasser & Takahashi, 2003). However, Kim and Hagtvet (2003) argue that “the use of item parcels and their
advantages are theoretically justifiable and meaningful only when the parcels retain the information acquired from the items” (p. 102). Little et al. (2002) propose that parceling not be used in situations where a researcher wants to capture the full complexity of variance at the item level, a caution that would seem to apply to the HSA, where each item is hypothesized to be an indicator of the test taker’s ability in a given strand. Hence, a parceling strategy was deemed inappropriate for this analysis.

In addition, data limitations prevented a fuller consideration of the effect of context variables on test performance. A potentially fruitful line of inquiry might focus on the issue of local item dependence (LID) among items tied to a common passage. Interestingly, although LID has generally been seen as a problem in test construction because of its negative effects on score reliability, it has been noted (Lee, 2002) that such effects might be worth the improved construct validity that results from the ability of passages to elicit “a wider range of comprehension sub-skills and process” (p. 12). Finally, it should be noted that the selection of a single-factor model of reading ability as the preferred model reflects its parsimony relative to multiple-factor models with comparable measures of fit to the HSA data. However, it has been argued that a statistically parsimonious model may not be the preferred model when considering other aspects of test structure, such as content representation, student preparation for the test, and development of test items (Meara & Sireci, 1999). Thus, this analysis should not be interpreted as a complete assessment of the strengths and weaknesses of a multiple-component model of reading ability.

**Conclusion**

The widespread use of large-scale, standards-based testing to measure educational achievement and, by extension, instructional effectiveness, administrative efficiency, and progress towards policy goals, has created a clear need for ongoing empirical study to validate the appropriate uses of the resulting test scores. An important part of these validation efforts concerns the relationship between the content standards that inform the structure and content of the test, and the scores generated by the test questions in actual test administrations. The inaugural HSA test data provide us with an opportunity to look carefully at a set of content standards and their relationship to the test scores that constitute an essential part of the context within which those standards should be understood. Analysis of those content standards adds to our knowledge of how standards-based test results should be understood and
interpreted.

Based on available sources, it is difficult to ascertain the extent to which the DOE reading content standards were developed using evidence from empirically based psychometric research (Hawai‘i State Auditor, 2001, p. 23). It is quite possible that psychometric research had a limited role in forming and evaluating the reading content standards and their associated test items. If so, studies such as this one might be useful in refining the ways in which we operationalize content domains in large-scale, high-stakes tests. Our analysis supports Lennon’s (1962) observation that “[w]e still have little experimental evidence about the reality of the distinctions that are made among the various reading abilities and about the validity of supposed diagnostic profiles of reading skills” (p. 332; cited in Alderson, 2000, p. 94).

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Charter School Efficiency: Comparing Hawai‘i’s Charters to Non-Charter Public Schools

Dick Carpenter
University of Colorado, Colorado Springs

Charter schools are public schools of choice built on decentralization, grassroots accountability, and market forces. As such, greater efficiencies may be present in these schools as compared to traditional public schools. If so, these “educational laboratories” may provide lessons for increasing student achievement more efficiently through diverse and innovative management, organization, structures, and operations. To date, however, few have examined whether this is so. Using stochastic frontier analysis, this study tested that proposition using reading and math data from Hawai‘i charter and non-charter public schools. Results indicate a small difference in technical efficiency in math, favoring charters over non-charters.
This research examines the technical efficiency of charter schools as compared to non-charter public schools using stochastic frontier analysis. Educational efficiency research concerns itself with how schools use various inputs/resources to increase student achievement. Although educational researchers and economists have pursued similar research for decades, their work has been almost devoid of any focus on charter schools. In fact, only two recent studies have considered this topic directly. This research extends those prior studies through a longitudinal comparison of charters to non-charter public schools from an entire state (Hawai‘i) using various types of inputs/independent variables and student achievement as the output.

Literature Review

Defining Efficiency

As defined by Boyne (2003), efficiency is the ratio of outputs produced by an organization to the inputs required in producing those outputs. Efficiency in education is enhanced either by improving student achievement at a given level of resources or by maintaining or increasing achievement as inputs are reduced (Hughes, 2004; King & MacPhail-Wilcox, 1994; Rice, 2004; Rolle, 2004). Although there are several forms of efficiency, the one most relevant to this study is technical efficiency, which refers to the ratio of inputs to outputs. This work on efficiency builds on the education production function literature going back more than 40 years (Coleman, 1966). This literature has attempted to explain the relationships between various inputs into the educational process and student achievement (Grosskopf, Hayes, Taylor, & Weber, 1997; Hall, 2007). According to Monk (1989) and others (Hedges, Laine, & Greenwald, 1994; Hummel-Rossi & Ashdown, 2002; Rice, 2004), a production function describes the maximum level of outcome possible from alternative combinations of inputs and summarizes technical relationships between and among inputs and outcomes. Production function research has historically relied on multiple regression (Crampton, 1991; Hanushek, 1986; Hummel-Rossi & Ashdown, 2002; King & MacPhail-Wilcox, 1994; Monk, 1981; Wenglinsky, 1998), but recently, researchers have begun to apply more sophisticated econometric tools, such as data envelopment analysis (Ruggiero, 1996) and stochastic frontier analysis (Adkins & Moomaw, 2005; Palardy & Nesbit, 2007), the latter of which is used herein.

The stochastic frontier analysis equation simultaneously models the
production function and the effects of technologies that contribute to inefficiency. The results indicate the effects of the different variables on achievement and efficiency and, the central question in this research, the relative level of efficiency of charters compared to non-charter public schools. The latter is clearly testing the assumption that there is something inherently different about charters as compared to non-charter public schools that will affect levels of achievement and efficiency. This is, in fact, one of the primary intentions of charter schools.

Charter Schools and Efficiency

The theory that charter schools will realize greater student achievement more efficiently is rooted in the school reform movement of the 1980s (Rice, 2004). According to theory, greater effectiveness in the educational process can be achieved through increasing efficiencies in the organization, management, and operation of schools (Rolle, 2004) and decentralizing education to the lowest level possible (Duncombe & Yinger, 1997; Ferris, 1991; Hess, 2006; Hoxby, 1996; Johnson, 1991; Odden & Clune, 1995; Silkman & Young, 1982). Accompanying this was the popularization of market forces through school choice: Competition would theoretically encourage the adoption of more effective teaching methods and operational procedures at lower costs (Coons, 1998; Greene, Peterson, & Du, 1999).

From this, charter schools were created as a choice-based public alternative to complete privatization. They represent the impulses of decentralization (Weil, 2000), grassroots accountability (Hill & Lake, 2002), and choice (Finn & Gau, 1998) but in a public structure, since charter schools are public schools. Districts or other agents enter into contracts or charters with parties interested in founding and operating an autonomous public school (Weil, 2000). Charter schools are often run by separate boards of directors comprised of stakeholders or community members, and schools must attract students through routine market means.

To do so, charters often adopt and organize themselves around specific themes and missions (Carpenter, 2006). According to Merrifield (2005), this is a routine function of competitive markets, where firms pursue specialization to attract customers and produce outputs with the greatest possible efficiency. Charter schools also typically operate without certain regulations that govern traditional public schools. In theory, this gives them greater flexibility to use and manipulate resources more efficiently. In addition, researchers (Hassel, 2005; Hoxby, 2000; Teske, Schneider, Buckley, & Clark, 2000) believe charter schools
benefit from structural, managerial, and operational efficiencies in how they can contract for or purchase services or choose which services they provide. In return, charter schools are expected to meet higher expectations concerning student achievement, efficiency, and the like (Hill & Lake, 2002)

Prior Empirical Work

To date, little empirical research has tested the charter school suppositions. In fact, only two studies are directly aligned with the research question in this study. In the first, Palardy and Nesbit (2007) employed stochastic frontier analysis to compare the technical efficiency of charters to non-charter public schools. Using a sample composed of charter schools and public school districts in Arizona, they found administration spending tends to have a negative effect on test scores, classroom spending tends to have a positive effect, and spending on support services or supplies had little effect on test scores. Specific to efficiency, more experienced teachers tended to increase efficiency, while greater percentages of minority students tended to decrease efficiency. Finally, charter schools appeared to have higher frontiers (i.e., student achievement) but lower levels of efficiency when compared to traditional schools. In the second, Carpenter and Noller (In Press) also employed stochastic frontier analysis to compare the technical efficiency of charters to non-charter public schools, but their sample differed from Palardy and Nesbit’s in an important way. While the latter compared charter schools to public school districts, the data in Carpenter and Noller were at the school level for all units of analysis. Their results revealed very limited differences in technical efficiency, favoring non-charter public schools over charters.

Methodology

This study relies on and extends these two early appraisals, particularly Carpenter and Noller, by asking: Is there a significant difference in technical efficiency between charter schools and non-charter public schools?

Sample

The sample included all Hawai‘i charter and “regular” non-charter public schools with Hawai‘i charter and “regular” non-charter public schools with complete data operating during the 2004-2005 through 2006-2007 school years. The use of multiple years of data represents a notable difference between our study and Carpenter and Noller (In Press) and Palardy and Nesbit
(2007). Those works studied only cross-sectional data while the design herein is longitudinal. For all school years, the sample included 264 schools, 19 of which are charters. The student population included 174,241 students (non-charter=170,255, charter=3,986) in 2004-05, 173,383 (non-charter=169,229, charter=4,154) in 2005-06, and 170,516 (non-charter=166,341, charter=4,175) in 2006-07.

Table 1
Variables Used in the Efficiency Model.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inputs</strong></td>
<td></td>
</tr>
<tr>
<td>Leadership</td>
<td>Dollars per student</td>
</tr>
<tr>
<td>Instruction</td>
<td>Dollars per student</td>
</tr>
<tr>
<td>Instructional Support</td>
<td>Dollars per student</td>
</tr>
<tr>
<td>Operations</td>
<td>Dollars per student</td>
</tr>
<tr>
<td>Other</td>
<td>Dollars per student</td>
</tr>
<tr>
<td>Year</td>
<td>School year</td>
</tr>
<tr>
<td>School type</td>
<td>Nominal (charter and non-charter)</td>
</tr>
<tr>
<td><strong>Efficiency</strong></td>
<td></td>
</tr>
<tr>
<td>Level of teacher education</td>
<td>Percentage of teachers with advanced degrees</td>
</tr>
<tr>
<td>Average years of teaching experience</td>
<td>Continuous (0, 1, 2..., n)</td>
</tr>
<tr>
<td>Level of teacher licensure</td>
<td>Percentage of teachers fully licensed</td>
</tr>
<tr>
<td>Family SES</td>
<td>Percentage free and reduced lunch</td>
</tr>
<tr>
<td>Special populations</td>
<td>Percentage of population in special education</td>
</tr>
<tr>
<td><strong>Percentage limited English proficiency</strong></td>
<td>Continuous (0, 1, 2..., n)</td>
</tr>
<tr>
<td>SPED student to teacher ratio</td>
<td>Percent minority</td>
</tr>
<tr>
<td>Student race/ethnicity</td>
<td>Continuous (0, 1, 2..., n)</td>
</tr>
<tr>
<td>Teacher to student ratio</td>
<td>Continuous (0, 1, 2..., n)</td>
</tr>
<tr>
<td>Total school enrollment</td>
<td>Continuous (0, 1, 2..., n)</td>
</tr>
<tr>
<td>Average attendance rates</td>
<td>Percentage of students in attendance</td>
</tr>
<tr>
<td>Disciplinary rate</td>
<td>Percentage of students suspended</td>
</tr>
<tr>
<td>Number of teachers</td>
<td>Sum of FTE</td>
</tr>
<tr>
<td>Year</td>
<td>School year</td>
</tr>
<tr>
<td>School type</td>
<td>Nominal (charter and non-charter)</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td></td>
</tr>
<tr>
<td>School reading and math scores</td>
<td>Percent proficient or advanced</td>
</tr>
</tbody>
</table>
Data and Analysis

Technical efficiency was measured using stochastic frontier analysis (Coelli, Rao, O’Donnell, & Battese, 2005; Kumbhakar & Lovell, 2000) in which efficiency is measured as the distance between some stochastic frontier and actual production and is usually assumed to be a function of a set of variables. Specific to this research, an inefficiency term containing school-related variables (i.e., average teacher experience) is added to the typical education production function containing inputs (i.e., expenditures) and outputs (i.e., state assessment results).

This specific model uses the variables in Table 1. All variables were measured at the school level. Efficiency variables were chosen based on prior research indicating a relationship between student achievement and various student, teacher, and school variables (Condron & Roscigno, 2003; Katzman, 1971). The school type indicator, charter versus non-charter public schools, represents the primary variable of interest and is included in both the production function and efficiency parts of the equation (Carpenter & Noller, In Press; Palardy & Nesbit, 2007). In the production function part of the model, inputs are represented by expenditures in several different categories, as per the prior work of numerous authors (Alexander et al., 2000; Berne, Stiefel, & Moser, 1997; Condron & Roscigno, 2003; Palardy & Nesbit, 2007; Schwartz & Stiefel, 2004; Stiefel, Berne, Iatarola, & Fruchter, 2000; Wenglinsky, 1997). Finally, including a year variable facilitates the measure of changes in outcome and efficiency over time (Coelli, et al., 2005; Kumbhakar & Lovell, 2000). The model takes the form:

\[
\text{test scores} = \beta_0 + \beta_1 (\text{Inst}) + \beta_2 (\text{InstSupp}) + \beta_3 (\text{Leadership}) + \beta_4 (\text{Operations}) + \beta_5 (\text{Other}) + \beta_6 (\text{Schltype}) + \beta_7 (\text{Year}) + \nu_i - u_i
\]

where

\[
u_i = \delta_0 + \delta_1 (\text{Enroll}) + \delta_2 (\text{Minority}) + \delta_3 (\text{FRL}) + \delta_4 (\text{SPED}) + \delta_5 (\text{ELL}) + \delta_6 (\text{Teachexp}) + \delta_7 (\text{Teached}) + \delta_8 (\text{Teacherlic}) + \delta_9 (\text{TeachStudratio}) + \delta_{10} (\text{SPEDteacherstutdratio}) + \delta_{11} (\text{Attend}) + \delta_{12} (\text{suspend}) + \delta_{13} (\text{Schltype}) + \delta_{14} (\text{Year}) + \delta_{15} (\text{FTE})
\]

Multiple Models

Consistent with Carpenter and Noller (In Press) and Palardy and Nesbit (2007), in addition to the primary model above (Model 1) this study also tested a second model (Model 2), which moved total enrollment, FRL (percent free and reduced lunch), percent minority, SPED (percent special education), and ELL (percent English Language Learner) variables into the production
part of the model rather than the efficiency part. This treated those variables as inputs. This reflects the idea that enrollment and student population characteristics typically cannot be manipulated by school leaders in the same way as technology variables (i.e., teacher variables, ratios, etc.), giving them the characteristics of an input. All models were estimated via maximum likelihood using Frontier 4.1 (Coelli, 1996). Differences between models were examined using log-likelihood ratios.

Results

Table 2 includes descriptive statistics for the variables represented in this analysis for all three years combined. Although charters and traditional public schools are similar in some respects, such as attendance rates, they differ on most other measures. First, the teachers who work in traditional public schools have significantly more experience and more are fully licensed, but they also possess less education compared to those working in charter schools. The student populations also differ. In contrast to those who have expressed concern over the possibility for “cream-skimming” in choice systems like charter schools (Ascher, Fruchter, & Berne, 1996; Fiske & Ladd, 2000; Henig, 1994; Smith & Meir, 1995), greater percentages of Hawai‘i charter students qualify for free and reduced lunch. However, more non-charter students are English Language Learners and are non-white. Moreover, while some have found that charter schools enroll fewer students with disabilities (Lacireno-Paquet, Holyoke, Moser, & Henig, 2002), Hawai‘i charters enroll a greater percentage of special needs students compared to traditional public schools. Hawai‘i’s charters are also smaller, employ fewer teachers, report greater student to teacher ratios, and suspend fewer students, as compared to non-charter schools.

Turning to the expenditure variables, charters spend less per student on support services, leadership, other, and operations, the latter of which is likely a function of the fact that charters often do not provide transportation or other types of services offered by traditional public schools. Instead, charters devote more funds to instructional activities, at a rate of approximately $2,000 per student. Nevertheless, achievement variables showed nearly identical means.

Prior to running these variables through the Frontier 4.1 software, colinearity tests were conducted, resulting in the deletion of one variable, teacher FTE. After running the data through the two models discussed above, model 2 proved to be the best fitting model for reading and math. Therefore, the remaining discussion will be limited to model 2 for reading and math.
Beginning with the expenditure input variables, none showed a significant effect. However, both school type and year were significant for math (see Table 3).

Table 2
Variable Descriptive Statistics.

<table>
<thead>
<tr>
<th>Efficiency Variables</th>
<th>Non-Charter Public</th>
<th>Charter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance rates</td>
<td>.93 .03</td>
<td>.92 .02</td>
</tr>
<tr>
<td>Teacher education</td>
<td>.28 .09</td>
<td>.36 .26</td>
</tr>
<tr>
<td>Teacher experience</td>
<td>11.71 2.55</td>
<td>5.91 5.54</td>
</tr>
<tr>
<td>Teacher experience</td>
<td>11.71 2.55</td>
<td>5.91 5.54</td>
</tr>
<tr>
<td>Teachers Fully Licensed</td>
<td>.87 .08</td>
<td>.31 .28</td>
</tr>
<tr>
<td>Teacher FTE</td>
<td>43 26.26</td>
<td>12.82 13.01</td>
</tr>
<tr>
<td>Student-teacher ratio</td>
<td>17 2.38</td>
<td>25.97 39.18</td>
</tr>
<tr>
<td>SPED student-teacher ratio</td>
<td>8.88 3.09</td>
<td>13 6.04</td>
</tr>
<tr>
<td>Percent free and reduced lunch</td>
<td>44 .21</td>
<td>.49 .26</td>
</tr>
<tr>
<td>Percent English Language Learner</td>
<td>.09 .08</td>
<td>.02 .03</td>
</tr>
<tr>
<td>Percent special education</td>
<td>.10 .05</td>
<td>.13 .06</td>
</tr>
<tr>
<td>Percent minority</td>
<td>.86 .12</td>
<td>.76 .21</td>
</tr>
<tr>
<td>Percent suspended</td>
<td>.04 .05</td>
<td>.02 .05</td>
</tr>
<tr>
<td>School enrollment</td>
<td>688.19 455.16</td>
<td>216.05 166.67</td>
</tr>
</tbody>
</table>

Expenditure Variables (in dollars)

| Leadership                                | 702.69 333.94      | 142.34 239.78 |
| Instruction                               | 5,192 1,547.18     | 7,203.25 1,959.33 |
| Instructional support                     | 3,168.72 1,173.41  | 2,617.35 1,936.39 |
| Operations                                | 1,569.88 519.76    | 750.94 248.68 |
| Other                                     | 82.93 32.06        | 65.11 24.84 |

Output

| Math                                      | .27 .14            | .28 .15 |
| Reading                                   | .52 .14            | .50 .20 |

For school type, charter schools were coded as 1 and non-charter schools were coded as 0. Therefore, the school type coefficient indicates after controlling for all other variables, charter status lowers the production function in math. In other words, charter schools report lower achievement compared to non-charter
public schools. The year variable indicates from 2004-05 to 2006-07, math scores decreased. Neither school type nor years were significant for reading scores.

Table 3
Variable Descriptive Statistics.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Math Model 2</th>
<th>Reading Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>coefficient</td>
<td>se</td>
</tr>
<tr>
<td>β0:constant</td>
<td>0.616</td>
<td>0.085</td>
</tr>
<tr>
<td>β1:instru</td>
<td>-0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>β2:instsupp</td>
<td>-0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>β3:leader</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>β4:operations</td>
<td>-0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>β5:other</td>
<td>-0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>β6:tye</td>
<td>-0.080</td>
<td>0.036</td>
</tr>
<tr>
<td>β7:year</td>
<td>-0.101</td>
<td>0.025</td>
</tr>
<tr>
<td>β8:enroll</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>β9:minority</td>
<td>-0.003</td>
<td>0.044</td>
</tr>
<tr>
<td>β10:FRL</td>
<td>-0.017</td>
<td>0.035</td>
</tr>
<tr>
<td>β11:SPED</td>
<td>0.164</td>
<td>0.192</td>
</tr>
<tr>
<td>β12:ELL</td>
<td>0.103</td>
<td>0.079</td>
</tr>
<tr>
<td>β0:constant</td>
<td>0.587</td>
<td>0.380</td>
</tr>
<tr>
<td>β1:teachexp</td>
<td>-0.001</td>
<td>0.004</td>
</tr>
<tr>
<td>β2:taused</td>
<td>-0.119</td>
<td>0.081</td>
</tr>
<tr>
<td>δ3:teachlic</td>
<td>0.122</td>
<td>0.124</td>
</tr>
<tr>
<td>δ4:ratio</td>
<td>-0.001</td>
<td>0.003</td>
</tr>
<tr>
<td>δ5:SPEDratio</td>
<td>0.001</td>
<td>0.003</td>
</tr>
<tr>
<td>δ6:attend</td>
<td>-0.291</td>
<td>0.384</td>
</tr>
<tr>
<td>δ7:suspend</td>
<td>0.058</td>
<td>0.220</td>
</tr>
<tr>
<td>δ8:tye</td>
<td>-0.210</td>
<td>0.087</td>
</tr>
<tr>
<td>δ9:year</td>
<td>-0.143</td>
<td>0.033</td>
</tr>
<tr>
<td>σ2</td>
<td>0.023</td>
<td>0.001</td>
</tr>
<tr>
<td>γ</td>
<td>0.296</td>
<td>0.074</td>
</tr>
</tbody>
</table>

Log likelihood: -427.55 -729.19
Observations: 792 792
AIC: 901.1 1504.38

* p < .05
Discussion and Conclusions

This research examined the technical efficiency of charter schools as compared to non-charter public schools using stochastic frontier analysis. Results indicated a significant but small difference in technical efficiency, slightly favoring charters over non-charter public schools in math. Such findings differ from Palardy and Nesbit (2007) and Carpenter and Noller (In Press), which found that non-charter public schools were more efficient than charters. Although this study does not measure allocative efficiency, the technical efficiency finding may be due to how charters use their funds. As expenditure means indicate, Hawai‘i’s charters spend more on instruction, diverting their funds away from other categories, such as leadership and operations.

The present finding of greater technical efficiency among charter schools may contrast with prior work but it is consonant with market theory assertions. In particular, since Hawai‘i was an early adopter of a charter school law in 1994, it is reasonable to assume that under market conditions more inefficient charters would have closed over time and a survivor bias would be evident, resulting in greater efficiency by charter schools. Moreover, Hawai‘i’s charter schools have had 16 years to develop and refine programs, which could lead to greater efficiency.

The present study also differs from Carpenter and Noller (In Press) and Palardy and Nesbit (2007) in its longitudinal design. Although not significant in reading, the year variable was significant in math in both the frontier (i.e., achievement) and efficiency portions of the model. In the frontier portion, a finding of decreasing achievement is never a good thing, but it is particularly worrisome here when the mean percentage of proficient and advanced across all three years for all schools was a mere 27.5% and the mean fell three years in a row. In 2004-2005, the mean was 29%, which decreased to 28.8% in 2005-2006 and then 24.8% in 2006-2007. As Linn and Haug (2002) discuss, one might have expected scores to increase sometime during this three-year period for purely statistical reasons; the fact that they did not, should give educational leaders and policy makers in Hawai‘i pause. In fact, in light of these mean percentages and the time trend, the fact that schools have become more efficient over time may be somewhat of a Pyrrhic victory. One could hardly find much consolation in stating, “Scores have gone down, but at least we are more efficient at it.”

Given that this is only the third study of its kind to ask this specific question, it is too early to draw firm conclusions and discuss with certainty implications.
concerning the efficiencies of charters compared to non-charters. Indeed, as additional data become available, particularly from other states, further research will be able to examine with greater definition the differences in performance and efficiency based on school type. Even then, Carpenter and Noller (In Press) caution that further research may be ambiguous in its results. Based on work by Merrifield (2006), they conclude charter schools, as public schools, may be too sheltered from the market pressures that compel efficiency and innovation in structure, management, operations, and instruction. Perhaps, but given the findings by Lubienski (2003; 2004; 2006) of structural and organizational innovations among charter schools, further research seems warranted. Moreover, as the number of charter schools continues to increase and as the movement matures, the structural and organizational innovations may have a greater opportunity to show an effect. Thus, as “educational laboratories,” charters may have something to demonstrate in terms of educational efficiency.

References


Efficiency and Productivity Analysis.


Strengths and Resources of Micronesian Students in a Hawai`i Middle School

Sandra M. Kaneshiro and Rhonda S. Black
University of Hawai`i at Mānoa

This qualitative study examined strengths and resources of four middle school Micronesian students who had been considered/referred for or who were found eligible for special education services. Two common strengths of all four students were family cooperation and resilience. Individual strengths included being calm, friendly, having self-confidence, and having pride in one's cultural heritage. Resources included family members and church communities. The participants talked about the importance of having a relationship with teachers at school. Results are then discussed in terms of Bronfenbrenner’s Bioecological Theory (Bronfenbrenner & Morris, 1998) in which the themes of culture, relationships, transitions, and cooperation overlap.
The Native Hawaiian and Other Pacific Islander population was one of the fastest growing groups in the United States between 2000 and 2010 (Hixson, Hepler, & Kim, 2012). In the 2010 Census, 1.2 million people in the United States identified as Native Hawaiian and Other Pacific Islander compared to 874,000 individuals in the 2000 Census (Hixson et al.; U.S. Census Bureau, 2001), represents a 40% increase. According to Harris and Jones (2005):

Native Hawaiian or Other Pacific Islander refers to anyone having origins in any of the original peoples of the Pacific Islands (for example, Hawai`i, Guam, Samoa, or Tonga). It includes people who indicated their race or races as Native Hawaiian, Guamanian or Chamorro, Samoan, or Other Pacific Islander, or who wrote in entries such as Tahitian, Mariana Islander, or Chuukese. (p. 2)

Other Pacific Islanders included people from Polynesian, Melanesian, and Micronesian islands. Those from Micronesian islands included Guamanians or Chamorros, Mariana Islanders, Marshall Islanders, Chuukese, and Palauans (Harris & Jones; U.S. Census Bureau, 2007).

Micronesians are Hawai`i’s newest and fastest growing immigrant population (Keany, 2011). Many families from Micronesian islands have migrated to Hawai`i for a number of reasons including improved employment opportunities and access to medical care (Gootnick, 2011; Johnson, 2012). However, the most frequently cited reason for moving to Hawai`i is to get a better education (Iding, Cholymay & Kaneshiro, 2006; Gootnick, 2011; Johnson, 2012). In May 2001, there were 321 Chuukese-speaking students enrolled in schools throughout the State (Hawai`i Department of Education, 2001). In June 2008, a similar report showed that there were 1,523 Chuukese-speaking students enrolled in the state’s public schools (Hawai`i Department of Education, 2008). Therefore, it is important to identify strengths and resources brought to the classroom by students who are recent arrivals from the islands of Micronesia, to aid in their quest for quality educational experiences.

Heine (2002) wrote about the challenges Micronesian children face in U.S. schools. These challenges include poor English language proficiency, lack of familiarity with school system expectations, and a mismatch between their home culture and the school’s culture. She stated that many families come to the United States with an inadequate understanding of community and classroom expectations and other procedural requirements of the American school

44
system. For example, while compulsory education to age 14 is often the case in Micronesia, the laws are not strictly enforced and daily school attendance is not given much attention (Heine, 2002). In the U.S., if a child wakes up late, newly arrived Micronesian parents may keep him/her home the entire day to avoid the embarrassment of having to walk into a class mid-session (Keaney, 2011). Students and parents are often surprised to learn that in the United States, school nonattendance has serious consequences, including failing grades, repeating a grade, or school officials calling Child Protective Services.

Studies about adolescents from Micronesian islands in Hawai’i’s public schools are scarce. Iding, Cholymay, and Kaneshiro (2006) interviewed nine adolescents who identified four barriers to learning—language, peer pressure, teachers’ prejudice/negative expectations, and ethnic conflicts. Talmy (2006) observed students and recorded interactions in a class for English language learners in a public high school in Hawai’i. He wrote about the challenges that Micronesian students faced including the fact that some educators did not care about the students. “Some teachers appeared unconcerned about the difficulties that Micronesian students encountered with curricula and classroom instruction” (Talmy, p. 31). Talmy stated that a climate of tolerance and respect for cultural and language differences is needed and suggested that educators ask Micronesian students for ideas in developing instructional materials. “There is no reason for teachers not to look to Micronesian students themselves as L1 materials writers and enlist them as experts in developing an evolving corpus of materials for school and classroom use” (Talmy, p. 42).

Much of the education literature regarding poor academic performance of minorities and immigrants derives from a deficit model. In a review of literature on how to foster positive connections between home and school, McCarthey (2000) wrote “the deficit view of students from diverse backgrounds persists and imposes a significant barrier to creating home-school connections” (p. 146) and that new models of teaching and learning that view students’ home backgrounds and diversity as assets are being developed. Similarly, Harry (1992) stated that the traditional deficit views of African-American and other minority students are being replaced with a strengths-based view in which culture is the overarching context of growth and learning. Therefore, the present study was framed to focus on the strengths and resiliency of select Micronesian adolescents attending one middle school (grades 6 – 8) in Hawai’i.

**Purpose of the Study**

The purpose of this study was to identify strengths and resources of four
Micronesian adolescents. In this study, Micronesian was defined as people from the Federated States of Micronesia (FSM, specifically from Chuuk), and from the Republic of the Marshall Islands (RMI). Information about the students came from several sources—verbal accounts from the students themselves, their family members, and their teachers; observations, and information in the students’ files. Pedagogical literature based on cultural norms and beliefs were available for African-American (Delpit, 1995), Hispanic (Turnbull, Pereira, & Blue-Banning, 2000) and Native Hawaiian (Johnson, 2003) populations, but no research-based literature was available for Micronesian populations. This study was conducted to share students’ perspectives in creating a body of literature regarding Micronesian students that will assist educators in building positive relationships with these youth.

Bronfenbrenner (1979) stated that students need to be studied in their natural contexts. This study examined the students’ cultural contexts and their micro-, meso-, exo-, and macrosystems (Bronfenbrenner, 1979; 1992; 1994) to identify their strengths and supports. More specifically, these contexts were:

- self – background and strengths
- family – responsibilities and cooperation
- school – significant adult relationships
- community – networks of support and resources

**Background Information of Micronesia**

Johnson (2012) explained that the United States has special relations with three jurisdictions in the Pacific Basin that are independent nations – the Republic of Palau, the Republic of the Marshall Islands (RMI), and the Federated States of Micronesia (FSM, consisting of the states of Yap, Pohnpei, Chuuk, and Kosrae) – that cover an area of more than a million square miles (Encyclopedia of Nations, 2012). These “jurisdictions are referred to as the Freely Associated States. Their citizens are also referred to as Micronesians” (Johnson, p. 5). Under the Compact of Free Association, migration is facilitated by the fact that Micronesian citizens are permitted to “travel freely between their homeland and the United States without a visa, health clearance, or limit of stay” (Johnson, p. 5).

**Family**

Prior to World War II, families lived in a compound consisting of thatch huts, a cookhouse, and a meeting house. Extended families lived together
on a single piece of land and these compounds were still common at the end of World War II. According to Hezel (2001), “In Chuuk during the years following World War II, a ‘family’ was usually composed of the core of a lineage—the women and their children—along with in-marrying men, numbering perhaps two or three dozen in all” (p. 8). Chuuk and the Marshall Islands were highly matrilocal, that is, a newly married couple lived on the wife’s family’s estate. “Chuuk represented in its purest form the tight organization of matrilineal groups into residential units” (Hezel, p. 10).

The shape and size of families changed in the 1960s. “The households of the extended family that once ate together, worked together, and formed a single economic unit began to operate more and more as independent entities” (Hezel, 2001, p. 12). Men left subsistence farming for cash paying jobs and as more cash became available, there was less of a need to live in family compounds. The communal cookhouse became obsolete and families began to value privacy in their homes. The Western education system, the church, and the media also influenced this change from extended families living in a compound to nuclear families living in independent homes (Hezel, 2001). “Yet, without the structural change that was effected by the cash economy, it is doubtful that these other forces would have had any significant impact on the organization of the family” (Hezel, p. 14). The transition from subsistence farming to a cash economy caused a major social upheaval in the lives of people from Micronesian islands.

Micronesian islands are diverse in terms of geography, language, and culture. Family continues to be important to Micronesians; they network and support each other through difficult times and celebrate happy occasions. Family members contribute to potlucks for birthdays, weddings, and during periods of mourning. They still believe that spirits of the dead need to be taken care of to ensure harmony on earth as well as in the afterlife. Rituals surrounding death have been simplified and modified in modern times, but are still important today.

**Education**

**Learning in Micronesia.** Prior to contact with Europeans, Micronesians learned through the oral tradition (Closeup, 2000). Rope making, canoe building, farming, and fishing were taught through demonstration and spoken words. When the Catholics, Protestants, and Jesuit missionaries settled in Micronesia, they first taught the Bible in English. Then as the missionaries learned how to speak local languages, the islanders’ native languages were used to teach the Bible. At the beginning of the twentieth century Protestants
established elementary schools in Micronesia. During the 1920s and 1930s the Japanese built more elementary schools (Close Up, 2000). The Japanese taught people from Micronesian islands how to speak Japanese and introduced competitive track and field events which are still carried on today (Micronesian Seminar, 2002). At the end of World War II, the American government built more elementary schools.

Following World War II, better medical and health care became available in the islands of Micronesia. People from Micronesian islands lived longer and the infant mortality rate decreased. As a result, the population increased. Then in 1986, under the Reagan administration, the Compact of Free Association took effect and migrations increased in number and frequency. “Through the 1990s thousands of Chukese have left their homes to take up residence on Guam, while hundreds more have moved to Saipan, Hawai‘i, or the mainland United States” (Hezel, 2001, p. 144). The Marshallese also left their native lands to seek better employment and education in the United States (Brekke, Filibert & Hammond, 2008). Under the Compacts of Free Association, citizens of Micronesia are exempt from meeting labor and visa requirements. “They may lawfully work and establish residence indefinitely” (Johnson, 2012, p. 11). Thus, the United States in general, and Hawai‘i in particular, has experienced the effects of increasing numbers of Micronesians seeking employment, medical care, and opportunities for education.

**Method**

This study is a descriptive case study (Merriam, 1998). Stake (2000) described “case” as “a child, or a classroom of children, or an incident” (p. 436). We have defined the case as four students who were of Marshallese or Chukese descent and were identified as English Language Learners (ELLs). Two received special education services under the Individuals with Disabilities Education Act (IDEA), one was referred for evaluation but deemed not eligible for special education services, and one was considered for evaluation.

**Participants**

**Student participants.** The participants were two Marshallese females and two Chukese males. The females were Rosie, thirteen years old, and Suka, fourteen years old. The males were Engino, thirteen years old and Tipuk, fourteen years old. Rosie was born and raised on the island of O‘ahu but had strong ties to the Marshallese community in Hawai‘i. Suka was born on the
island of Ebeye in the Marshall Islands and moved to O`ahu when she was five years old. Engino was born in Guam, raised in Chuuk and moved to O`ahu when he was eleven years old. Tipuk was born in the district of Sapuk on the eastern side of the island of Weno in Chuuk. At age four, his mother moved to Hawai`i and his grandmother assumed role of primary caregiver. At age eight, Tipuk was reunited with his family in Honolulu.

Rosie and Suka, whose families were Marshallese, received special education services; Rosie, under the category of Specific Learning Disability and Suka under the category of Intellectual Disability. Engino and Tipuk were Chuukese. Engino was referred for special education eligibility evaluation two times but did not meet eligibility criteria. Tipuk was considered for special education eligibility evaluation, but never was evaluated. All names are pseudonyms (selected by the participants) to preserve confidentiality. Consent forms in English and the students’ first languages were personally delivered to the parents of these students.

School setting. At the time of the study, the total student enrollment at Honolulu Middle School (a pseudonym) was 466 and included grades six through eight. Ethnicity of the student population was as follows: Other (26.9%), Filipino (26.6%), Samoan (11.4%), Part Hawaiian (8.7%), Chinese (8.7%), Indo-Chinese (6.1%), Japanese (2.8%), Black (2.2%), Korean (2.0%), Hawaiian (1.5%), Hispanic (1.5%), White (1.1%), Portuguese (0.2%), Native American (0.2%). The largest category, Other, included Micronesian students since there was no separate ethnic category in the school profile data base. Of the 466 students at Honolulu Middle, 47, or approximately 10 percent of the total received special education services. Five (9.4%) students in the special education program at Honolulu Middle School were Micronesian; four students were Marshallese and one was Pohnpeian. Rosie and Suka were of Marshallese descent and were receiving special education services. There were no students of Chuukese ancestry receiving special education services at Honolulu Middle School.

Family members. Family members who participated in this study were adults eighteen years or older who lived in the same household as the student or who had close contact with the student, and were not limited to natural or biological relatives. The number of family members who were interviewed was based upon availability. One of Suka’s family members was interviewed; two of Rosie’s family members were interviewed; three of Tipuk’s family members were interviewed, and five of Engino’s family members were interviewed.

Teachers. Several authors have presented evidence that a positive classroom
community facilitated growth among diverse learners (Peterson & Hittie, 2003; Sapon-Shevin, 1999). Therefore, each student participant was asked to identify and describe his/her best teacher. Best teacher was defined as the teacher from whom you learned the most. We used the term “best” because this word is more comprehensible to ELLs than the term “culturally responsive.”

**Interpreters.** Interpreter A was a Chuukese male in his 50s. He was born in the village of Necheche on the island of Tol in Chuuk Lagoon. Necheche is the village where Engino’s father lived; therefore Interpreter A knew the family prior to this study. He was educated in Chuuk and on the U.S. mainland. He earned an Associate in Science (AS) degree from the College of Micronesia (COM)-Chuuk Extension. Interpreter A lived in Honolulu at the time of this study and also served as a cultural broker.

Interpreter B was a Chuukese female in her 20s. She was born in Honolulu but raised on the island of Weno in Chuuk Lagoon. She earned an AS degree from the COM-Chuuk Extension, lived in Chuuk during most of this study and served as an interpreter when the first author visited Engino’s and Tipuk’s families in Chuuk. She did not know the families prior to this study and moved to Honolulu later during the study.

Interpreter C was a Marshallese female in her 20s. She was born in Honolulu but raised on the island of Majuro in the Marshall Islands. She earned a Bachelor of Arts degree at the University of Hawai‘i-Hilo Campus. She also served as a cultural broker for this study. She did not know Rosie’s or Suka’s families prior to this study.

**Instrumentation**

The following data were collected over an 18 month period: (a) information from student files; (b) student, teacher and parent interviews; (c) observations of students in natural settings; and (d) field notes. Prior to interviewing each student, background information was retrieved from student files, including the IEPs for the two Marshallese participants. References to student strengths, interests, talents, family members, family supports, and other general background information were noted.

Student participants were given a disposable camera and were instructed to take pictures of family members, friends, and of cultural artifacts. The photographs were used during interviews when students were asked to talk about the pictures.

A semi-structured interview format (Merriam, 1998) was used wherein a list of questions or issues guided the interviews, but the exact wording or
order of questions was not determined ahead of time. Interviews did not exceed 60 minutes. Initial interviews of participants and their family members were tape recorded except in Rosie’s case. Interpreters were present for interviews with the parents, except in Rosie’s case. The interview with Rosie’s mother was impromptu, therefore, the first author was not prepared with a tape recorder or an interpreter. Interpreters translated interviews into English, but they were not word-for-word translations because some Marshallese and Chuukese words were difficult to express in English. Follow-up interviews to clarify questions that emerged from the initial interview were not tape recorded and were conducted with prepared questions unique to each participant. Observations of students’ strengths, home and school experiences, and resources were recorded through field notes. A member check was performed by asking student participants, teachers, and family members to review summaries of the data to ensure accuracy and to clarify or provide additional information.

Data Collection

The first author had seven face-to-face meetings with either Tipuk’s mother or stepfather and participated in two teacher meetings where his academic progress was discussed. She also visited Sapuk village on the island of Weno where Tipuk was born. Weno, the main island in Chuuk Lagoon, is formed by a fringing reef. Chuuk Lagoon represents just one island group of Chuuk State which is comprised of a total of 290 islands and islets (Karolle, 1993). One family member was interviewed in Sapuk. Tipuk was observed in his general education social studies class, during lunch recesses, once as he canvassed a neighborhood and placed advertisements on doorknobs or mailboxes, and once when he supervised his younger siblings while his mother worked. The first author also ate lunch with Tipuk and his family.

The first author had seven face-to-face meetings with either Engino’s mother or father and participated in one teacher meeting where Engino’s academic progress was discussed. She visited the villages of Necheche and Faro on the island of Tol in Chuuk to see first-hand where Engino spent his childhood. Interviews were conducted with Engino’s paternal and maternal grandmothers on Tol. Engino was a student in the first author’s classroom during the study, therefore she observed him daily among his peers in an instructional setting. She observed Engino once as he engaged in water play with a toddler outside of his house and during lunch recesses.

The first author met Suka’s mother four times in or near their home. Meetings with Rosie’s mother were brief and occurred when the first author
went to the house to pick up Rosie or to pick up a disposable camera. She arranged to interview Rosie’s foster grandfather and had lunch with Suka and Rosie on three occasions. On those occasions, Rosie and Suka talked more while they sat in the backseat of the car than they did while sitting for an interview. For all student participants, when they referred to photographs, it was easier to talk about themselves, their family members, and things that were important to them.

Triangulation (Denzin, 1978) of the data relied on multiple sources of information—different participants were asked similar questions, information was obtained through school record reviews, interviews, observations, and photographs. When data from the Honolulu interviews were inadequate, the first author traveled to Chuuk to seek alternate sources of information. Lincoln and Guba (1985) recommended peer debriefing to establish credibility of a study. The interpreters served this function by interpreting body language and providing literal and interpreted translations of student participants’ and family members’ comments.

Data Analysis
Lincoln and Guba (1985) listed four steps in analyzing data using a constant comparative method—unitizing, categorizing, filling in patterns, and member checking. During the first step of analysis, unitizing, the data were separated into units. Data included observation field notes, interviews, observation sheets, photographs and school records.

The second step, categorizing, was accomplished by color coding the data; different colors were assigned to participants’ strengths, resources, culture, school experiences, and a miscellaneous category which included data that were intriguing but did not fit into the previous four categories. Four themes emerged—cooperation, relationships, transitions, and culture.

The third step according to Lincoln and Guba (1985) was filling in patterns. While comparing and sorting data, gaps were identified and data were revisited; student participants or family members were asked follow-up questions.

The fourth step was member checking. Member checking was ongoing, and in the final stages, appropriate parts of the document were read to the respective student participant and family members. Tipuk and all of his immediate family members were present for the final member check. The final member checking for Engino was completed with both of his parents who listened and nodded; they did not provide additional information or corrections to the text. The final member checking for Rosie was conducted with Rosie and her mother.
The final member checking for Suka was done with Suka and her mother who listened, nodded, and did not provide additional information or corrections to the text. While they agreed with our interpretations and conclusions, it may have been that they were acquiescing because they did not want to challenge someone perceived to be in a position of authority (the first author was a teacher at their child’s school).

Results

Research Question 1: What were the strengths of students from Micronesian islands?

Two common strengths were found among all four participants in this study. In addition, each participant demonstrated individual strengths. The common strengths were family cooperation and resilience.

Common strength—family cooperation. We defined family cooperation as an individual taking responsibility for household tasks to ensure the well-being and safety of others in the household. Rosie had three younger brothers, one of whom was a toddler. Rosie frequently looked after the toddler while her mother did household chores. One photograph she shared was of herself and the toddler. Suka’s household responsibilities included folding the bedding, sweeping, mopping, cooking, and looking after children. Suka proudly shared, and her mother later confirmed, that she was an accomplished cook and baker. Her specialties included fried chicken and homemade bread.

Engino’s paternal grandmother used the term “family cooperation” during an interview on the shore of Chuuk Lagoon. She nourished and nurtured Engino during his parents’ absence. She shared that he walked a great distance to gather breadfruit then carried the breadfruit home in a sack over his shoulders. He also walked a great distance to fill containers with water from a tank that collected rain water. Engino’s maternal grandmother also stated that Engino picked breadfruit and carried water for her family. She added that “I hospital with babies, I’m helping my parents.” When asked what made her think she would be good working with babies, she shared, “I babysit a lot, I feed them a lot, I clean them a lot.” Throughout the study, whenever she spoke, she spoke with confidence.

Engino and his family members in Honolulu, as well as in Chuuk, were very friendly and hospitable. At different times, the first author observed visiting relatives preparing food in their modest home in Honolulu. At the conclusion of this study, both mother and father extended an invitation to visit at any time in the future.
Tipuk’s strength was his calm demeanor. When Tipuk was at school, he was calm and sat quietly with his younger brother under a tree during lunch recess. Tipuk’s teacher reported that Tipuk never exhibited behavior problems in class; he complied when asked to do academic tasks and he participated in class assignments without complaining.

Research Question 2. What resources were available to help students from Micronesian islands?

Family members. Family members were the greatest resource for the student participants followed by their church communities. Rosie’s mother agreed that Rosie’s foster grandfather provided advice and monetary support during the absence of Rosie’s father. Her foster grandfather also opened up his home for special occasions. Rosie used an entire disposable camera to take pictures of family members during the Thanksgiving holiday in a rural area of O‘ahu. Suka’s grandparents and uncle provided temporary housing for Suka and her family, despite being warned of an eviction. Her uncle parked a van outside the front door of his ground floor one-bedroom apartment to extend the sleeping area.

Engino’s paternal and maternal grandmothers were resources when he lived with them in Chuuk. Tipuk’s maternal grandmother helped with his birth in Chuuk, so she was a support and guiding force since the first day of his life. At the age of four, Tipuk’s mother moved to Hawai‘i and left him in the care of her mother and her sister, affectionately called Mama, the Chuukese word for mother.

Church communities. Rosie and Suka attended church regularly; each went to churches of different faiths that helped to perpetuate Marshallese culture. Rosie shared photos from a Christmas celebration which featured Marshallese songs and dancers in matching outfits. Suka’s brother received financial support from their church so he could enroll in a correspondence course.

Engino attended church occasionally. Interpreter A reported seeing Engino at church engaged in friendly conversation with people outside of his school and his neighborhood. Tipuk, his mother, Mama, and his maternal grandmother attended church regularly while living in Chuuk. They continued to attend a church of the same faith when they moved to Hawai‘i. With the help of church members, he earned money which, according to Tipuk’s mother, was shared with the family for basic household supplies, like toilet tissue and soap. The job, organized by church members, involved walking neighborhoods and leaving
Research Question 3. What were the school experiences of students from Micronesian islands?

Rosie spent the first seven years of her life in a rural area of O‘ahu. When she was in the second grade the family moved into the city and she was referred for comprehensive initial evaluation to determine eligibility for special education services. The student support team (SST) determined that she was eligible for special education services under the category of Developmental Delay. Three years later, the Developmental Delay category was changed to the category of Specific Learning Disability. She transitioned to Honolulu Middle School for the sixth grade. She started the year with special education classes in English language arts and math, but as the content of the science and social studies classes became more challenging, she was placed into special education classes for these classes as well.

According to school records, Suka attended a Head Start program in the Marshall Islands for approximately three months prior to moving to Hawai‘i. When she and her family arrived in Honolulu, she started kindergarten. During the fourth grade, school records indicated that Suka was functioning below grade level in all academic subjects, had difficulty in understanding and applying new concepts, and required small group instruction in order to complete class assignments. That same year, she was referred for an initial comprehensive evaluation. Based upon the results of the assessments, the SST agreed that Suka was eligible for special education services under the category of Mild Intellectual Disability. Re-evaluation occurred three years later, her functional academic skills were still in the extremely low classification and communication skills were in the borderline range. She continued to be eligible for special education services under the category of Mild Intellectual Disability.

Engino was referred for comprehensive evaluation (to determine eligibility for special education services) during the seventh grade due to minimal progress in reading and writing. After reviewing the assessment results, the SST determined that Engino was not eligible for special education services because his low academic scores could be due to “a lack of instruction in reading and math and his limited English proficiency.” Engino was again referred for evaluation during the eighth grade because he continued to have difficulty. The SST again determined that he was not eligible for special education services because there was insufficient documentation of classroom intervention strategies and progress monitoring. Engino’s seventh grade teacher...
wrote, “Engino can accurately copy written English, but apparently is unable to comprehend it without some help. He is not up to the level of the other Chuukese kids who have been here as long as he has.”

Standards-based content areas were challenging for Tipuk, especially English language arts and math. He repeated seventh grade; during that year, math continued to be a challenge. Tipuk’s mother and teachers discussed his academic progress and considered him for comprehensive testing for special education eligibility, but agreed to wait before making the referral. They also agreed that if Tipuk continued to do poorly in math, he would be moved into a special motivation class, an alternative setting where students received closer monitoring. Tipuk was moved to this alternative setting and was not referred for initial comprehensive testing. By the end of the school year, he earned the necessary credits for promotion to eighth grade for the following school year.

One of the protective factors in the school experiences of the four participants were teachers who respected individual differences, created positive learning environments, and built relationships with students. Rosie looked forward to the end of the instructional period when she had the opportunity to “talk story” with her best teacher. She liked it when her teacher talked about her own children’s social situations. Rosie repeatedly said that if she talked to her mother about boys she would “get mad.” Suka also identified a female teacher as her best teacher. She especially liked when her teacher took her out in the hall to talk with her privately rather than discussing personal situations or redirecting her in front of peers. Suka shared, “She talks about her daughter’s problems to us. Cause like her daughter has a lot of boys that like her.” Suka’s teacher stated that she believed Suka would do well in a career in customer service or sales because she had “strong social skills.” This teacher also stated that Suka’s strengths were “the ability to develop social networks at school, her resilience to negotiate home and school demands, and her ability to comprehend, read, and write.”

Engino, despite being asked multiple times, would not identify his best teacher. He was observed several times during lunch recess in Suka’s teacher’s room. She welcomed Engino to play computer games on the condition that he took turns with others and used the equipment appropriately—and he did. When Tipuk’s best teacher was asked how she helped students from Micronesian islands to be successful in class, she replied, “Try to create a friendly, safe environment by playing interactive games that promote small group dynamics regardless of language.” Tipuk’s teacher said she challenged him with supports in place and genuinely praised him as many times as she could.
These student-teacher relationships were built on respect and trust.

The three teacher participants in this study used various visuals including graphic organizers. They noted that students who were learning English were more successful in group work than in individual tasks and in oral discussions rather than written work. These teachers also gave ELL students extended time to complete assignments and explained the same class assignment in different ways. These strategies helped the students to be successful in the classroom.

**Themes in the Current Study**

Four themes emerged from our analysis -- cooperation, relationships, transitions, and culture.

**Cooperation.** Engino's paternal grandmother talked about family cooperation. Rosie's foster grandfather said it was part of Marshallese tradition to help family and friends. All four participants and their family members demonstrated cooperation. When Tipuk's family was visited to do a member check, Tipuk's step-father said he wanted to add that, “Everyone in this family has a job to do, from the smallest one to the biggest.”

**Relationships.** Tipuk formed very secure relationships with his mother’s family. Engino also benefited from nurturing relationships with both his paternal and maternal grandmothers. Both Suka and Rosie developed special bonds with their respective teachers. All participants were involved in caring for younger children. Thus, all formed important multi-generational relationships as well as relationships in different environments.

**Transitions.** Like many families from Micronesia, our participants lacked stable living situations (Keany, 2011). The four participants experienced a myriad of transitions. Suka, Engino, and Tipuk moved to Hawai‘i. Engino and Tipuk remained in Chuuk while very young and were cared for by family members. They later rejoined their birth parents and siblings in Honolulu. Adapting to a new lifestyle and geographical area were transitions. Suka and Tipuk moved frequently to find more suitable housing. All four participants had younger siblings; the birth of each sibling represented another transition. In addition, all four participants were adolescents. Adolescence by definition is a transitional stage of human development that involves changes and growth in physical, social, emotional, and cognitive functioning.

**Culture.** All four participants were able to fluently speak the language of their parents. Rosie’s foster grandfather wanted Rosie to continue to help people and to perpetuate the Marshallese language. Suka said she will always respect her older brothers and take care of her parents because these are cultural
expectations. Engino’s mother reflected on how families once cooked out of the same pot as a symbol of unity. Hezel (2001) wrote, “Where a person slept at night has never been as clear a marker of identity as where he or she ate” and “… the sharing of food has always been an expression of solidarity among members of a family everywhere in Micronesia” (p. 12). Tipuk’s mother explained how she and her husband shared household tasks in Hawai‘i, a behavior that would have been unacceptable in traditional Chuukese culture. Engino’s and Tipuk’s culture evolved from traditional to non-traditional.

Discussion

Societies in Micronesian islands have more collectivist rather than individualist values (Hezel, 2001; Trumbull, Rothstein-Fisch, Greenfield & Quiroz, 2001). Heine (2002) wrote, “ Sharing and keeping the interest of the group over the individual are values that are not consistent with the individualistic and competitive values encouraged in American schools” (p. 6). Children from Micronesian islands are known to take care of younger siblings while they are young, and look after their aging parents as adults. Some educators may see Tipuk’s declining a tutoring session because he needed to watch his younger siblings after school as problematic. We, however, chose to see this as a strength and evidence of family cooperation. He had an important role in his family and these responsibilities gave him a sense of pride.

Collectivist cultures value relationships (Correa, 1992). The four participants in this study developed trusting relationships with adults at school. Suka liked it when her teacher took her into the hallway to talk privately with her. Rosie connected with her teacher when the teacher talked about her own daughter’s challenges with peer relations. Tipuk was able to convince his teacher that he could not attend after school tutorial because he had to pick up younger siblings. Engino developed a trusting relationship with Suka’s teacher who allowed him into her classroom during lunch recess to play games on a computer. If teachers recognize the importance of relationships to get to academic tasks at hand, Micronesian students may be more successful in the classroom. Teachers could build relationships by learning common phrases in a student’s first language. For example, saying hello and goodbye in the student’s first language demonstrates to the student that her culture is valued.

Bronfenbrenner (1979) stated that those working with children and youth need to increase their understanding of the various systems which influence these young people’s lives. Bronfenbrenner contended that child development
is dependent on the nested environments (or systems) in which the child is raised. Each system contains roles, norms and rules that can powerfully shape development.

Figure 1. Bronfenbrenner’s Bioecological Systems Model. Retrieved June 1, 2012 from http://www.biomedcentral.com/1471-2458/9/94/figure/F1

**Micro- and mesosystems.** A developing person, or a child, is in the center of all systems. Home and family forms one microsystem, while a classroom forms another. A mesosystem is a system of microsystems, or the interactions between microsystems (Bronfenbrenner, 1979). For example, a mesosystem might represent the interaction between home and school.

Taylor (1994) discussed how “adolescents’ behavior is shaped by the nature of the environment they inhabit, and by their perceptions of how they are viewed (e.g., with fear, suspicion, or apprehension) by those with whom they interact” (p. 122). A secondary teacher interacts with an adolescent an average of one hour per day, five days per week in a typical middle school where students change classrooms and teachers for different subjects. The interactions are brief and are typically focused on academic tasks. The teacher becomes very familiar with one of the microsystems—the student in the classroom—and may also observe another microsystem of student and peers. The teacher typically does
not become familiar with the microsystem of family and home. The teacher needs to examine the student in all systems, because all of these systems influence the development of the adolescent (Bronfenbrenner, 1979).

**Exo- and macrosystems.** An exosystem is a setting in which the student is not an active participant. For example, the local school board whose members create school policies is an exosystem. The macrosystem, “overarching patterns of ideology and organization of the social institutions common to a particular culture or subculture” (Bronfenbrenner, 1979, p. 8) also influences human development. It includes educational, economic, religious, political, and social values (Rice & Dolgin, 2005). Macrosystems could include the influence of politics and economics on the child’s life.

Educators may observe just one facet of a multi-faceted individual in school and may not consider the macrosystem. Rosie was part of an organized church group that rehearsed songs and dances for their Christmas celebration. During the celebration, Rosie snapped photographs that showed a men’s group and women’s group in matching outfits. Identity, sense of belonging, and perpetuating the culture are priorities for the Marshallese community. Macrosystems differ in various countries and in ethnic or socioeconomic groups. When school personnel do not understand macrosystems of culturally diverse families or when families of culturally diverse learners do not understand school culture, there is a greater potential for making faulty referrals for special education testing and placement.

**Transitions.** Bronfenbrenner (1979) contended that transitions (e.g., movement from one geographical area to another or the addition of a new family member) also contributed to human development. The multiple transitions, including the adaptation to a Western culture, experienced by the Micronesian students in this study have contributed to their development. Teachers should learn about the transitions in their students’ lives and explore beyond the classroom microsystem to better understand their students’ strengths and potential for growth. The strengths described in this study were not present in the classroom alone; they were also demonstrated in the home and in the community.

Table 1 shows the relationship between the themes that emerged in this current study with Bronfenbrenner’s Bioecological Theory (Bronfenbrenner & Morris, 1998). Like the elements of the Bioecological Theory, the themes of culture, relationships, transitions, and cooperation overlap.
Table 1
*Elements of Bioecological Theory and Themes.*

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<td>Time Spans</td>
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**Implications for Practice**

Educators need to build relationships with students. While teaching, educators can learn about their students’ cultures, different environments, transitions, and incorporate their strengths. Artiles and Ortiz (2002) stated that family members of culturally diverse groups may have different beliefs about parent roles in education. “To prevent misunderstanding, miscommunication, and conflicts, educators need to understand the perspectives of the parents and other family members with whom they work” (Artiles & Ortiz, p. 88). They explained that current literature identifies the strengths of culturally diverse families, but educational systems fail to value these strengths and accommodate diversity. More professional development for teachers who work in schools with Chuukese and Marshallese students is needed. The first author has conducted several workshops for teachers about Micronesian students. At the conclusion of each series of workshops, the participants had more positive attitudes towards Micronesians and were surprised to learn about the diversity within the various Micronesian cultural groups. Knowledge of background information about
the geography, language, family structure, and other facets of cultures can help educators build relationships.

Brown, D’Emidio-Caston, and Benard (2001) stated that relationships support human development. Other authors (Peterson & Hittie, 2003; Sapon-Shevin, 1999) have presented evidence that a positive classroom community facilitated growth among diverse learners. Werner and Smith (1992) identified protective factors in the Kauai Longitudinal Study—average intelligence and sociable temperament; affectionate ties with parent substitutes; and an external support system. The four participants in this study were intelligent and sociable; they experienced affectionate ties, and had external support systems. Family members were the most important external support system.

The population of students from Micronesian islands continues to increase (Brekke, Filibert & Hammond, 2008); therefore, the task of building relationships and teaching seems daunting. We have five recommendations for educators with respect to building relationships with students from Micronesian islands. First, we recommend that educators be informed about their students’ lives outside of school. Educators need to build relationships with students and their family members in community settings. Heine (2002) recommended time for acculturation and a positive environment where trust is built between the teacher and students from Micronesian islands. We agree and believe a heritage program where students can learn more about their respective cultures and where community members can share their expertise is an idea worth exploring. Second, when developing instructional materials or teaching content, educators should make connections to Micronesian culture and concepts including students’ experiences. For example, teachers could use common greeting words in their students’ first languages, and use Pacific Island foods, stories, and music as topics to generate interest. The third recommendation is to incorporate the use of photographs in instructional materials. Photographs could be a prompt for a writing assignment or could capture a student’s progress on a science project. The fourth recommendation is to implement a strengths-based curriculum like the PORT-able Model of Brown, D’Emidio-Caston, and Benard (2001). PORT is an acronym for Participation, Observation, Reflection, and Transformation. Students explore topics of interest, plan a course of study, and take actions based upon what they have learned or observed. Brown et al. (2001) reported high levels of engagement because students select their topics and are responsible for their learning. A fifth recommendation is to initiate face-to-face or phone contact to invite parents to school events. A school flyer written in English and sent home with a student may be forgotten in the
student’s book bag or overlooked at home. Obiakor, Utley, Smith, and Harris-Obiakor (2002) suggested that teachers leave their “comfort zones” (p. 18) to learn more about their students’ cultures.

**Directions for Future Research**

We would like to recommend future research in two areas. The first is technology as a learning tool and the second is teacher perception. Educators have asked for effective and culturally appropriate instructional strategies to meet the needs students from Micronesian islands. Technology and photography appear to be two areas of interest for the children from Chuuk and the Marshall Islands. Will computers and other technology enhance learning? There is a need for more research using technology as a learning tool for students from Micronesian islands.

The relationship between teacher perception and academic success of students from Micronesian islands also needs to be explored. Many current educational practices are deficit-based. Will students be more successful if their strengths are identified and developed? How can teacher’s perceptions about students from Micronesian islands be changed? These questions should be addressed in future research.

In summary, we found that the participating students had many strengths and supports that schools do not traditionally recognize. The students had good family and community support. They were responsible, resilient, caring young adolescents who valued their relationships with others. Educators would do well to see these supports and traits as assets and work to weave these components into existing curricula and class activities.

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Student Resilience and Military Deployment of a Parent

Bryan Sprouse
Hawai'i Pacific University

Increased deployment of military personnel in recent years has increased the need to study the effects of military deployment on military dependent students. Surveys were distributed to twenty eighth grade students at a public school with many military dependent students in Honolulu, Hawai'i. Four case studies were selected from the group and observed to gain a richer description of the phenomenon. Military dependents had higher median grade point average (GPA) than non-military students. Relationships between anxiety and having a parent in the military, being afraid of going to school, fearing for one's safety, and feeling alone were observed. These suggest that anxiety plays a larger role than previously expected. The study describes the observed relationships between deployment status and GPA, extracurricular activities and higher GPAs, and parent-child resilience scores. The goal of the research is to better serve military dependent students.
September 9, 2011 was the beginning of a new era for military families. Active and reserve military personnel were scheduled to spend more time away from home to meet the needs of our country in the confrontations around the world. The frequency of deployment of military fathers and mothers overseas increased (Department of Defense, 2005).

Hawaii’s Department of Education, estimates that over 15,000 military dependent students attend Hawai‘i’s public schools. There are 45 schools that have significant populations of military dependent students, mostly in the Central and Leeward districts (Joint Venture Education Forum, 2006). In 2007, the Department of Defense reported that Hawai‘i had the second highest concentration of military personnel stationed outside the continental United States, and Hawai‘i ranks ninth among states in number of military personnel and families.

The increase in the frequency of parental deployment presents a new challenge for students and teachers not only in Hawai‘i, but any military impacted school. Many teachers are not familiar with the unique lifestyle and challenges faced by families during military deployment (Allen & Staley, 2007). Teachers are educating emotionally distracted children and may not have the proper skills to meet their needs. Research has shown that “...continual emotional distress can create deficits in a child’s intellectual abilities, crippling the capacity to learn” (Goleman, p.27).

**Statement of Purpose**

The purpose of this study is to determine whether an adolescent’s resilience level helps a child cope with the military deployment of a family member. Variables that will be discussed include: (1) academics, (2) behavioral cues, (3) classroom interactions, and (4) deployment phases. The initial question of resilience and coping abilities is explored in a mixed-methods study. The researcher uses both a survey to assess resilience level and classroom observations to determine a causal relationship between resilience and an adolescent’s ability to cope with military deployment.

**Methods**

This mixed-methods study used descriptive statistics and case studies to describe the relationship between resilience and deployment. The research design was reviewed and approved by the State of Hawai‘i, Department of
Education in order to conduct the research at a Central district middle school in Honolulu, Hawai‘i. Twenty-two students in an advisory class were given a letter of consent; of which, twenty were returned, signed by the parent. Each student that returned a permission slip also signed a letter of assent agreeing to participate in the study. Those twenty students completed a background survey.

The background survey was designed by the researcher; it was peer-reviewed and approved by Hawai‘i Pacific University’s Interscholastic Review Board (IRB) to assure that the survey posed very little risk to the participants. The background survey tested for factors (i.e. hobbies, extracurricular activities) that might help students cope with deployment. The questionnaire also has a semantic differential which is a 7-point Likert scale that acts as an attitude scale for typical behaviors adolescents might manifest during deployment of a parent.

The twenty participants were also tested to establish their resilience level using Wagnild and Young's Resilience Scale test (1993). This test consisted of a 26-item questionnaire; each question was scored on a 7-point Likert scale; a higher score on the scale corresponded to a higher resiliency level. The questions were positively worded and the statements were taken verbatim from a previous study by Wagnild and Young (1993). The 26th question on the survey is the measure of concurrent validity of the resilience scale.

Using the data collected from the background study, the researcher selected four case study participants depending on their parent’s deployment status (cannot be deployed, is deployed, going to be deployed, coming back from deployment, or going to be re-deployed). Classroom observations of each case study participant were completed by the researcher or the eighth grade counselor; twice a month, for two months. The researcher discussed the observations with the participants’ teachers in order to establish the process validity for the observations.

In addition to the classroom observations, the participants filled out a weekly progress report for all their classes. The weekly progress reports monitored the students’ academic progress. Likewise weekly detention reports and referrals were logged and helped to identify behavioral problems.

**Limitations and Delimitations**

This study is meant to be an exploratory study to determine if there is a relationship between resilience and one’s ability to cope with deployment. The researcher acknowledges that resilience and deployment will have different affects on each student. An adolescent’s resilience depends on many extraneous
factors. The resilience score obtained by the researcher, will only reflect that the participants’ resiliency at the time the test is taken and cannot be gauged throughout the investigation. Adolescents are still developing both physically and cognitively, these changes can affect their resilience and coping abilities. Some students may be emotionally fragile and unable to answer questions of this nature.

Another limitation to the study is its small sample population. Case study participants were chosen through stratified convenience sampling. The small sample size reduces the researchers’ ability to generalize his findings to the larger population of military-dependent students.

**Results**

The results are reported by case study. Data for each case study includes background survey, classroom observations, teacher feedback, the progress reports, and behavioral concerns. Those students eligible to participate in the case study portion of the project had to be military dependent student. Within the class there were 14 military dependent students. Each eligible participant was separated into groups by their parent’s deployment status (1) cannot be deployed, (2) going to be deployed, (3) is deployed, (4) coming back from deployment, and (5) going to be re-deployed. Five students reported that their parent could not be deployed, one reported that their parent was going to be deployed, two reported that their parent was currently deployed, and five students reported that their parent was coming back from deployment. There were no students with parents that were going to redeploy. One student marked more than one of the deployment status boxes. If more than one student was in a particular group, the researcher then randomly chose a name out of a bowl to participate in the case study portion of the research. Pseudonym’s were used for the participants to protect their identity.

**Cannot Be Deployed**

Amy is a 13 year old female. Her father’s particular role in the Air Force prevents him from being deployed. Amy scored a 141 on the resilience scale, reflecting a high level of resilience. She was the only case who maintained a GPA above a 3.00 throughout the entire length of the study. Amy ended the third quarter with a 3.40 GPA, the third highest GPA in the advisory class. She enjoys playing soccer on a club team and she has a variety of hobbies. On her background survey she reported having difficulty sleeping and she was
diagnosed with acute insomnia last month. Although there is no specific medical reason for her insomnia, acute insomnia can be caused by “significant life stress” like starting at a new school. Amy and her family moved to Hawai‘i in July 2007. Insomnia symptoms include sleepiness and problems, general tiredness, irritability, and problems with concentration or memory (Gelfand, 2007).

The researcher observed that Amy often has trouble staying awake in some of her classes. She was seen with her “head down” in both her Math and Science classes, it was unclear whether she was sleeping or not. Her Math and English teachers reported that Amy sometimes had a “hard time concentrating” in their classes.

The teachers described Amy as a “well-rounded student”; she excels in all he classes and is in an accelerated Math class. She was an exemplary student both academically and behaviorally. Observations confirmed her positive participation in class discussions by being “quick to raise her hand”. Amy was on the Principal’s Honor Roll by achieving a 3.00 or better, all three quarters this year. Her academics were balanced by her “quirkiness”. Her Social Studies and Math teachers commented on Amy’s “odd” sense of humor. Her odd behavior does not seem to be attention seeking like most class clowns. It is a part of her personality; which contributes to her uniqueness and makes her a pleasure to have in class.

Observations show that in class, Amy is focused and a diligent worker, after completing an assignment she will often “help others at her table”. She is very outgoing and willing to take risks, even if it means looking silly in front of her peers. Amy is very mature for her age, and shows what her English teacher describes as “wisdom beyond her years”, which reflects her love of learning. This academic style could be due in part to the tremendous support she receives from both her parents. At home, her parents encourage Amy to read, instead of watch television. Both parents know the “value of a good education” and her mother recalls being hesitant to enroll Amy in public school after they arrived because they had heard “horror stories” about the Hawai‘i public school system.

**Going to be Deployed**

James is a 13 year old male; his father is in the Navy and is going to be deployed to Iraq in June 2008. James scored a 136 on the resilience scale, indicating that he has a high level of resilience. In his spare time, he likes to draw and play videogames, but does not play any sports. On the background study he reported feeling alone; this could be because he “lives on base” and
most of his friends do not. He has a group of friends he hangs out with, but his friends are very negative. They bring down each other’s self esteem by always putting each other down and calling each other names. His girlfriend moved away at the beginning of the year, but he still chats with her frequently on MySpace, an online community website. He admits that he spends most of his free time by himself, on his computer.

James found out in September, 2007 that his father’s ship was going to be deployed to Iraq. His first quarter GPA was a 2.18; after learning the news of his father’s deployment, his GPA dropped to 1.33 but by the conclusion of this research his GPA had increased to 1.60. By the end of the third quarter his GPA was 1.00. He is in danger of being retained unless he passes his math class. Observations in his math class showed him to be “focused and quiet”, despite other students talking. During the assignment, he was interrupted by another student and he was “quickly refocused” on his assignment. Since James is failing a core class, he is eligible to attend weekly tutoring sessions provided by the school but his parents would not sign the consent form. James’s parents do not seem to provide a lot of academic support, resulting in his indifference towards his academics.

In the researcher’s classes, James is very animated; he can be very engaged at times but sometimes his behavior is a bit immature. When James works in groups he tries to be a leader, but he is usually the source of distraction. This behavior tendency is amplified during un-constructed times, like advisory. This tendency can get James into trouble; during the research period, James had the most referrals out of all the cases. James and two of his friends served five detentions for stealing from another student. He has served the most detentions out of all the students in my advisory class. James also committed the most “serious” behavioral offense out of all my cases; most of the detentions in my advisory class were assigned because of tardies and other “Class D” offenses.

Is Deployed

Bobby is a 13 year old male; his father is in the Army and has been deployed since December, 2007. Bobby is a unique case, in the fact that even though his father is stationed thousands of miles away, Bobby receives at least one email a week from his dad. He scored a 123 on the Wagnild and Young’s resilience scale, which is classified as a moderate level of resilience. Bobby enjoys playing videogames on the weekends and hanging out with his friends. On the background survey he reported fearing for his own safety, this could be
attributed to his father’s deployment or it could be due to the fact that Bobby moved to Hawai’i earlier this year.

Bobby transferred to the current school in August, 2007; when he first arrived, Bobby was very reserved and did not talk much. Bobby is athletic; he enjoys playing basketball and football. Although he doesn’t play for the school’s team, he plays with an organized league in his community. Despite being active in sports, Bobby still seems “emotionally insecure”. The researcher’s observations show that his short stature is a “sensitive point” among his peers. At recess he was teased about his height, which resulted in a scuffle between himself and one of his “friends”. His struggles to fit in at a new school were also reflected in his academics.

Bobby transferred with a GPA of 1.17; since his arrival, his GPA has increased to a 2.00 and peaked at 2.18 during the research. At the end of the research period his GPA settled at 2.00. Seeing a student’s GPA decrease when they transfer in or out of a school is typical. Sometimes, when students transfer out of a school, they are unhappy with the change, so they stop working. Initially Bobby resented having to move to Hawai’i but since moving he has adjusted well. Since his father’s deployment, Bobby’s GPA has remained constant despite the stressful change. Even though Bobby’s dad is deployed, he still finds time to check up on Bobby’s academic progress. His dad frequently uses the online grading program to communicate with his teachers. Despite Bobby’s moderate resilience level, he maintained his GPA since his father was deployed. Frequent contact and parental academic support might be compensating for his moderate resilience level.

Classroom observations have shown he has an increased value of his peers. Bobby is very playful; he was repeatedly seen “talking with his classmates” during instruction and group assignments. In one case, Bobby was “joking around with his friends” and in doing so he fell down on the sidewalk during a science activity and he had to go to the nurse. An increase in the value of friends is a common trait among students whose parent is deployed. From conversations with Bobby’s teachers, the researcher learned that Bobby is not an “instigator”; he is more of a “reactor to situations”. He will often take cues from his friends’ behavior and he acts out and expresses similar behaviors without knowing why.

**Coming Back From Deployment**

Beth is a 13 year old female, whose father is in the Air Force. Her father returned from deployment in June 2007. She scored a 151 on the resilience
scale, reflecting a high level of resilience. She has a 3.0 GPA and is involved in extra curricular activities and yearbook. She is smart, but not very motivated to learn. Beth is social, gregarious, and very naïve. Beth is always happy and cheerful; her teacher’s cannot recall seeing her in an unpleasant mood. When given a choice to either go ahead in the lessons or have “free time”, she often chooses to talk with her friends or draw. Her English teacher stated “that [Beth] knows how to manipulate the system, doing just enough to get by and doesn’t really stand out academically”. She is a very typical example of a middle school student.

Over the course of the study, Beth’s GPA decreased by almost three-quarters of a point to 2.33. In science, her grade dropped from a C to an F. She stopped turning in assignments on-time and began talking with her friends more during class. Apparently Beth had missed so many yearbook deadlines that she was in danger of being kicked out of yearbook class. I notified Beth’s parents via email, voicing my concerns about her failing grade. Her father told me that he and his wife had both started back at school. Since they were going to night classes, they had allowed Beth a little more independence when it came to her academics. She was essentially in charge of all on her academics and they were providing very little academic support for her. Beth was able to raise her third quarter GPA to 3.33. When necessary, Beth can succeed and do well. When pushed, Beth seems to be at her best.

**Discussion**

Each of the reported relationships was confirmed by the high chi-square and low p value. Results were reported for any relationship that displayed a p value less than 0.1. The researcher was willing to accept that 9 out of 10 times the observed relationship would be correct. In trying to investigate the affects of deployment, specifically how resilience is affected by the deployment of a parent, a higher p value was accepted in order to thoroughly investigate any possible relationship between variables that might exist. Having more relationships gave the researcher a broader description and research base from which conclusions could be drawn. In the case of a relationship being found between ordinal values, resilience score and GPA, the populations were further tested using non-parametric tests (i.e. Kruskal and Wallis, Mann-Whitney). A parametric test would have been used if the data was normally distributed, but to be conservative the researcher could not assume that the data was normally distributed. With the small sample size, non-parametric tests seemed better
suited to compare the potentially independent populations.

**Worry About Parents**

It seems that students who are not worried about their parents are more likely to not be afraid of going to school (p value = 0.0284). If this is true, could the same be said for the reciprocal relationship? However, the data does not support this conclusion because the expected value was between students who worried about their parents and were also afraid of going to school was less than one. More research between these variables is suggested before any solid conclusions could be drawn.

**Feeling Anxious**

The variable of feeling anxious was related to having a parent in the military (p = 0.091), being afraid of going to school (p = 0.0706), fearing for one’s safety (p = 0.0369), and feeling alone (p = 0.035). Each possible relationship was supported by a low p value and expected values that were greater than one, except for the relationship between feeling anxious and being afraid of going to school. All the non-military students reported not feeling anxious, showing that military dependents, in this study, are more anxious than non-military students. However, because of the small sample size, this relationship cannot be generalized to the school's military dependent population. The existence of a relationship seems unlikely; Sprouse (2006) showed no relationship between military dependents and higher levels of anxiety.

The relationship between anxiety and being afraid of going to school did not yield expected values greater than one. Although it seemed that students, who were not anxious, were also not afraid of going to school. It would seem logical that high levels of anxiety might lead to more absenteeism and being afraid of going to school. From the data, it does not seem plausible to assume a relationship between being anxious and being afraid of going to school. However, it seems possible that the variables, being anxious and fearing for one’s safety, are related. Students who reported not being anxious were more likely to also report not fearing for their own safety. However, the ability to generalize my results to a larger population is negated by the small sample size. If the variables are related then you could assume the reciprocal relationship might exist and a higher level of anxiety, or stress, might result in fearing for one’s safety. Previous research found no connection, in military families, between higher stress levels and fearing for personal safety (Russo & Fallon, 2001).

The variable of anxiety was also linked with feeling alone. Students who
reported not feeling anxious; also reported not feeling alone. There was no additional research to confirm or refute the researcher’s findings. The numerous relationships between anxiety and other deployment variables suggest that anxiety might play a larger role in deployment than previously thought. Anxiety is triggered by stressful events, like deployment; further investigating its role seems to be a logical in determining how military deployment is affecting students.

**Grade Point Average (GPA)**

In educational research, GPA has always been the measure of academic achievement, if deployment had an affect on students’ academics that would be reflected in GPA. A difference in GPA was observed in the following areas: (1) military and non-military students, (2) deployment status, and (3) resilience.

**Military vs. Non-military Students**

The results of the background survey suggest a difference between military and non-military students GPAs. Military students’ average GPAs were 0.75 points higher than non-military students. Further comparisons showed that the two populations were in fact significantly different (p = 0.0593). The confirmation that the two groups are independent suggests that there is a difference between military and non-military students GPAs. Previous research showed that there was no significant difference between military and non-military GPAs (Eddy, 1972 & Sprouse, 2006). Eddy’s research is outdated and the topic has not been revisited in over 35 years. Much has changed since his research and military dependents face different challenges today than they did 35 years ago. The researcher’s initial observations reported a very “large academic gap” between military and non-military students. The researcher attributed those gaps to the “transient lifestyle” of military-dependent students, an observation supported by research (Sanderson, 2004 & Lash, 1990).

Even though the participating military students’ higher GPAs than the non-military students was; it suggests that military students’ academics are not being affected by the threat of deployment, as the researcher hypothesized. In retrospect, the higher GPA might suggest that a military dependents’ turbulent, transient lifestyle better prepares them for stressful events like deployment. The ability to generalize these results to the entire school population is severely limited by the small sample size, the researcher suggests expanding research into the difference between military and non-military student’s GPAs.
Deployment and GPA

The results of the background survey suggested that deployment status and GPA \( (p = 0.0747) \) are not independent variables. Students whose parent cannot be deployed and those that have come back from deployment have higher GPAs than students whose parent is deployed or going to be deployed. In the case studies, Amy and Beth’s average GPA was one and a half points higher than James and Bobby’s average GPA. This data would confirm the researcher’s preconceived notion that deployment is affecting academic achievement. Still, the researcher’s findings are questionable because of the small sample size.

The outcomes of the case studies are interesting but not surprising. In retrospect, a majority of the students that the researcher saw “struggling with deployment” were males. The fact that Amy and Beth had higher GPAs suggests that maybe females cope better with deployment than males. Although during the study, an eighth grade boy from our school was recognized for his contributions during his father’s deployment. His mother commented on his ability to assume the role of “man of the house”, in his father’s absence. Maybe the expectations or stress of being the “man of the house” is too much for some male students. Another possibility is that the “hardest” times for students to cope with are the time before and during deployment, remember James’s dad is going to be deployed and Bobby’s dad is deployed. However, a future study is suggested to further investigate whether deployment status is affecting GPA.

Resilience and GPA

Even though the resilience levels did not coincide with the GPA groupings using the chi-square test, there was a relationship between the student’s raw resilience scores and GPAs. As indicated by Figure 1, there was a clear upward trend telling us that as GPA increases so does a student’s resilience score. The slope of the line indicated that resilience scores increase by 9 points for every 1-point increase in GPA.

Proportionally a 9-point increase on the 182-point scale is very small. That difference is minimal and the low R2 value indicates that it is probably not significant. In the case studies, Beth (151, 3.33) and Amy (141, 3.40) both had high resilience scores and high GPAs, confirming the observed relationship between resilience and GPA. Although the boys’ James and Bobby, cases go against the trend. James had a high resilience level but a low GPA (136, 1.00), while Bobby had a moderate resilience level and an average GPA (123, 2.00). The researcher hypothesizes that Bobby’s higher GPA is resultant from
continuous parental academic support. An in-depth look at level of parental support and GPA would assist in making a conclusion.

The observed relationship between a student’s resilience score and GPA was compared further to find out that the relationship was not statistically significant. This time James’ case validates this observation, he scored very well on the resilience score but he had a low GPA. However, the results could have been skewed by the small sample size and the reliability of the Wagnild and Young’s Resilience Scale. The student’s resilience scores reflect the student’s resilience at the time they took the test, making it hard to tell anything conclusively. This being the first time using Wagnild and Young’s Resilience scale, the validity and reliability of the test were unknown. If the researcher had more time and resources, these topics could be properly tested with a larger sample size.

**Hobby**

Past research has proved that having a hobby can reduce stress. In the researcher’s advisory it seems that having a hobby was related to worrying about their parents (p-value = 0.00287) and having a parent in the military (p-value = 0.0288). Those students with a hobby reported that they worried less about their parents. Each of the case studies’ had a hobby, and none of them reported being worried about their parents. Further research would deem necessary in order to confirm the relationship between having a hobby and worrying less about their parents. The students with a hobby have less time to worry about their parents; maybe it is resultant of a higher resilience level. The small sample
size made it impossible to compare the populations further and verify whether having a hobby results in a higher resilience. Although the cases had different levels of resilience but they all had a hobby.

In regards to having a hobby and a parent in the military, the researcher was expecting this relationship. It is no coincidence that almost all of the military dependent students surveyed had a hobby, the JVEF and the National Child Traumatic Stress Network recommend having a hobby in their parent’s guide for deployment. Research shows that having a hobby is supposed to help adolescents cope with the stressful events, like deployment. This recommendation could be why all the military dependent students had a hobby. This phenomenon might just be limited to the selective sample, but future research could be done to confirm the phenomenon of having a hobby and a parent in the military.

**Sports**

The background survey results suggest a relationship between the variables playing a sport and fearing for one’s safety ($p = 0.035$). In my advisory, it seems that student’s who do not play a sport; do not fear their safety as often as those that do play sports. Neither relationship was observed in the case studies. Although most of the students reported playing very physically demanding sports like cheerleading, soccer, baseball, basketball, and football. Perhaps by playing sports, their increase fear for their own safety is connected to a fear of being injured while playing. The idea of fearing for one’s safety is really vague and should be specified in if this type of research is done again.

Being involved in extra curricular activities and playing sports was also associated with a higher GPA. Two recent studies confirm that “participation in extracurricular activities is associated with an improved grade point average” (Broh, 2002). Guest and Schneider (2003), in a review of research cited many “positive associations between extracurricular participation and academic achievement”. In the researcher’s advisory, students who participated in sports average GPA was 0.30 points higher than those students who did not. Confirming that students who participate in extra curricular activities (i.e. sports and hobbies) often have higher GPAs, but these outcomes are still heavily debated. The difference observed in GPA between the students who played sports and those that did not, were not independent and the difference is not statistical significant. A longitudinal study reviewed by Broh found that “participation in some activities improves achievement, while participation in others diminishes achievement”. However, a colleague suggested that playing interscholastic sports and being part of a team results in a “sense of belonging”,
which could be beneficial to military dependent student who is transitioning into a new school. If playing on a sports team can help with stressful events, like transitioning to a new school. It might also be beneficial to help military dependent students through stressful times, like military deployment.

**Resilience**

Resilience level had no correlation with any of the tested variables. However, the small sample size does not instill a lot of confidence that resilience does not play a role here. The researcher concedes that resilience is a tough characteristic to measure. Resilience is dependent on many factors which makes it very difficult to measure. The Wagnild and Young’s resilience scale is the best tool the researcher found to measure resilience. The reliability of the Wagnild and Young resilience scale is unknown. Even as a measure for resilience, the researcher acknowledges that this score is reflective of one point in time. Resilience is ever-changing and is not constant. The students are still developing as individuals and learning coping strategies, which is reflected by the wide range of scores. Even those students that are resilient scored themselves lower on the scale.

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Causal Attribution for Illness: Cross-Cultural Perspectives

Brenda Cartwright and Shuqiang Zhang  
*University of Hawai‘i at Mānoa*

Youn-Sun Jin  
*Kyungpook National University*

This cross-cultural research study investigates people’s perceptions about the causes of illness. Volunteer participants from two distinctive national contexts (i.e., the United States, South Korea) were asked to rate the importance of researcher-provided causes of illness. A factor analysis resulted in the identification of three factors for both groups (i.e., lifestyle, personality and supernatural). However, participants in the United States tended to attribute greater importance to these three factors considered together than did South Koreans. Implications for training, research and practice are discussed.
A wealth of research exists across a number of disciplines describing people’s views about illness (Cope, David, & Mann, 1994; Fortune, Richards, Main, & Griffin, 2000; Furnham & Baguma, 1999; Hodgetts & Chamberlain, 2000; Landrine & Klonoff, 1992, 1994; Lawrence, et al., 2006; Nguyen & Rosengren, 2004; Shiloh, Rashuk-Rosenthal & Benyamini, 2002). On the whole, research indicates that individuals ascribing to the Western biomedical system perceive health and illness from a scientific point of view. This perspective is focused on what can be observed and measured. Therefore, persons holding this view tend to attribute illness to natural factors, including poor diet, smoking, alcohol use, lack of exercise, stress, weight, heredity. On the other hand, individuals ascribing to Eastern medicine systems, based on typically based in traditional, anecdotal, or non-scientific practices hold a holistic view about health and illness. This view considers mind, body and spirit as an integral whole. In addition to natural factors, many of these individuals tend to attribute illness to supernatural factors. These factors include God’s punishment, destiny and karma, as well as sinful thoughts, witchcraft, the Evil Eye, and voodoo.

Landrine and Klonoff (1994) conducted one of the first empirical studies investigating cultural diversity as a factor in causal attributions for illness. These researchers argued that belief in supernatural causes may account for the multitudes of ethnic differences in health-related behavior. Landrine and Klonoff were concerned about whether asking participants to generate causes would inhibit individuals from racially, ethnically, and linguistically diverse groups (hereafter, referred to as People of Color) to volunteer their belief in supernatural causes. These researchers hypothesized that People of Color who try to respond in a socially desired manner may perceive that others may likely view such attributes as “superstitious.” Consequently, Landrine and Klonoff examined whether a change from customary free-form surveys was warranted when conducting research with People of Color.

Landrine and Klonoff (1994) first elicited participants’ views using a free-form survey, and then followed this survey with a researcher-provided list (i.e., forced-choices) for participants to rate in terms of their importance. The list consisted of both supernatural and natural causes. The study included 149 participants, of which 79 were European Americans and 70 were People of Color (i.e., 35 African Americans, 23 Hispanic/Latino/a Americans, and 12 Asian/Pacific Islanders). As predicted, when asked to generate and rate causes of illness in terms of importance, no significant differences were found between European Americans and People of Color in terms of the number or type of
cause generated or in the importance rating assigned. However, when these same participants were provided with the researcher-provided list to rate in terms of importance, People of Color endorsed and rated supernatural causes significantly more important than did European Americans.

Nguyen and Rosengren (2004) examined cross-cultural understandings among European Americans and Vietnamese Americans about the causes of illness. Participants were asked what caused the individual to get sick when presented in a series of three types of stories: (1) only biological information, (2) only magical or supernatural information, and (3) both biological and “magical or supernatural information. Nguyen and Rosengren found that biological causality was the dominant form of reasoning about illness across age groups (i.e., children and adults) and cultural groups (i.e., European Americans and Vietnamese Americans). However, when supernatural information was provided in stories or individuals were asked directly about the possibility of such causes, supernatural explanations were presented by Vietnamese children and adults, while European Americans explicitly rejected supernatural explanations. These findings were consistent with past research suggesting the importance of context in eliciting different explanatory frameworks in individuals. These findings were also corroborated in a recent study investigating the health beliefs among People of Color and European Americans across the United States (Cartwright, 2010).

Over the last decade a growing body of research has documented the association of people’s views about health and illness attributions and their health-related actions and behaviors (deValle & Norman, 1992; Hjelm, Bard, Nyberg & Apelqvist, 2005; Sheikh & Furnham, 2000; Weinman, Petrie, Sharpe & Walker, 2000). This line of inquiry is particularly significant since beliefs about the causes of illness appear to be important determinants of certain health related behaviors (e.g., strategies for self-care, treatment and help-seeking). Differences in perceptions about causes about illness were found to affect participant’s use of health care. For example, Pourat, Lubben, Yu and Wallace (2000) found that older Koreans held negative perceptions about their health due largely to the influence of Confucian ideology and the association of aging with physical deterioration and dramatic decline in life expectancy. However, these perceptions did not lead to increased numbers of doctor visits. In another study, Chinese women from Hong Kong who subscribed to a Western stress model of illness had a more positive attitude towards seeking professional help than immigrant and refugee Asian women residing in Canada who subscribed more to supernatural beliefs (Fung & Wong, 2007).

Beliefs about how illness is perceived, experienced, and expressed, as well
as decision-making about what can be done about it varies across cultures. For example, Marty (as cited in Lloyd, McConnell & Zahorik, 1994) found in the African American culture there seemed to be an underlying sense of fatalism (e.g., “What will be, will be”) combined with economic realities that result in reluctance to dedicate the resources of time, effort and money to preventive and wellness endeavors.

Kay (as cited in Valdez, 2001) found among Latino/a Americans, “health is viewed as the result of good luck and a reward for good behavior, a gift from God, and not to be taken for granted “ (p. 519). Latino/a Americans in that study believed health is maintained by acting properly, eating healthy foods, and working a proper amount of time, while illness is caused by an imbalance in a person’s body or a punishment for wrongdoing. Likewise, Yee and Weaver (1994) found that many Native Hawaiians consider illness a punishment for wrongdoing.

A prevalent view found among Native Americans and Asian Americans in the United States is that illness results from disharmony between the person, nature and the universe (Jovchelovitch & Gervais, 1999; Yee & Weaver, 1994). Similarly, in a qualitative study on social representations of illness among Chinese participants in England, findings show that in spite of differences related to age and degree of acculturation, the common representational system for illness was based on traditional notions of disequilibrium or lack of “balance” and “harmony” (Jovchelovitch & Gervais).

Arab and former Yugoslavian men in Sweden established the influence of supernatural factors as well as the emotional stress related to the migratory experiences as factors related to the development of illness (Hjelm, et al., 2005). Health for these men was described as mainly related to individual and social factors, including the ability to be an active human being, being occupied and economically independent, and remaining sexually functioning.

Extant research documents the fact that each culture has its own beliefs about illness and its treatment, which carries different cultural and symbolic meanings, values and behavioral norms (Bhui & Dinos, 2008). Therefore, it is critical that health care practitioners are aware of the cultural symbolism and meaning attached to symptoms. The sociocultural context that influences the manifestation of illness when diagnosing, assessing and treating individuals from culturally different backgrounds must also be taken into consideration.

Unlike most available studies, the aim of this research was to investigate causal attributions for illness among participants who were exclusively from culturally, racially, ethnically, and linguistically diverse groups. To this end,
the present study compared patterns of responses among participants in
two different countries (i.e., United States and South Korea) regarding
their perceptions about the causes of illness. Two research questions were
investigated: (1) Are causal attributions for illness similar among People
of Color in the U.S. and South Koreans? (2) Are the ratings of importance
assigned to causal attributions for illness similar among People of Color in the
U.S and South Koreans?

Method

Participant Characteristics

A total of 299 individuals volunteered to participate in this study. Two
culturally contrasted populations including a general adult age sample in the
United States and a non-traditional age college student sample in South Korea.
A majority (n = 178, 59.5%) of the participants were female, including 125
(70.2%) residing in the U.S and 53 (29.8%) who resided in South Korea. The
remaining 121 (40.5%) were male, including 86 (71.1%) living in South Korean
and 35 (28.9%) living in the U.S.

Respondents ranged from 18 to 60 + years in age. Most (n = 221, 73.9%)
were older (i.e., 23-60+), of which 134 (60.6%) resided in the U.S, while 87
(39.4%) resided in South Korea. Seventy-eight (26.1%) were traditional college
ages (i.e.18-22), including 52 (66.7%) in South Korean and 26 (33.3%) living in
the U.S.

All participants in South Korea (n = 139) self-identified as Korean. On
the other hand, participants living in the U.S, identified membership in several
racial/ethnic groups, including African Americans (n = 50, 16.7%); Native
Hawaiians and other Pacific Islanders (n = 37, 12.4%); Asian Americans (n =
25, 8.4%); Alaskan/Native Americans (n = 11, 3.7%), and Hispanic/Latino/a
Americans (n = 7, 2.3%). Thirty (10%) participants self-identified membership
in other racial/ethnic groups.

Educational levels ranged from high school to graduate degrees. Participants
living in the U.S. were highly educated, with 50 (31.2%) reporting they had
earned graduate degrees, 40 (25%) having some college, and 31 (19.4%)
college graduates, while 37 (23.1%) reported they had completed high school.
Accordingly, fifty-four (33.8%) of the respondents living in the U.S. reported
annual incomes of $50,000 or more; 27 (16.9%) reported annual incomes
between $35, 001 and $50,000; 22 (13.8%) reported annual incomes between
$25,001 and $35,000; 18 (11.2%) reported annual incomes between $15,001
and $25,000. Ten (6.2%) reported annual incomes between $7,501 and $15,000, while 25 (15.6%) reported annual incomes of $7,500 or less. Two participants who resided in the U.S. and four (2.5%) participants living in the U.S. did not report annual incomes.

In contrast, 84 (60.4%) respondents living in South Korea reported they had completed high school; forty (28.8%) completed some college, 8 (5.8%) reported they were college graduates and 7 (5%) graduate degrees. Consequently, most respondents living in South Korea (n = 41, 29.5%) reported annual incomes between $25,001 and $35,000; while 30 (21.6%) reported annual incomes of $7,501 and $15,000; 25 (18.7%) reported annual incomes of $7,500 or less. Fifteen (10.8%) reported annual incomes between $35,001 and $50,000; 12 (8.6%) reported annual incomes between $7,501 and $15,000; while 10 (7.2%) reported annual incomes of $50,000 or more. Five (3.6%) of these participants did not report annual incomes.

Among participants identifying religious affiliations, the majority of respondents residing in the U.S. (n = 93, 58.1%) reported Protestant, while the majority of the respondents living in South Korea (n = 46, 33.1%) reported Buddhism. Twenty-six (16.2%) respondents living in the U.S. identified their religious affiliation as Catholic, 8 (5%) Buddhism, 4 (2.5%) Agnosticism, 3 (1.9%) Islam, 1 (.6%) Judaism and 16 (10%) identified other religions. Twenty-seven (27, 19.4%) of the respondents living in South Korea identified their religious affiliation as Catholic and other religions, respectively, 24 (17.3%) Agnosticism, 8 (5.8%) Protestant, and 2 (1.4%) identified Islam. Nine (5.6%) participants living in the U.S., and 5 (3.6%) of the participants living in South Korea did not identify a religious affiliation.

**Instrumentation**

The Perceptions of Illness (POI) survey requested demographic information (i.e. gender, age, race/ethnicity, education, annual income, religious affiliation). A questionnaire was also included providing participants with 37 items, including natural, interpersonal, and supernatural factors for possible causes of illness, as used in Landrine and Klonoff’s (1994) study. Participants were instructed to rate these researcher-provided items in terms of how important they personally believed the causes serve as attributions of illness. These ratings were presented on a Likert scale that ranged from 1 (not at all important) to 7 (extremely important).
Procedure

After obtaining approval from the research review board at the host institution, the primary author utilized a purposive sampling procedure. To invite volunteers in the U.S., electronic message requests were sent to leaders at targeted institutions (i.e., Historically Black Colleges and Universities [HBCUs], universities serving large numbers of Native Hawaiians and other Pacific Islanders as well as Latino/a students), and to managers of listserves (i.e., National Association of Multicultural Rehabilitation Concerns [NAMRC], Consortia of Administrators for Native American Rehabilitation [CANAR]). For the purposes of this study, respondents were eliminated who did not meet the criterion for inclusion (i.e., People of Color). Recipients of the electronic messages in the U.S. were offered the opportunity to visit the lead researcher’s webpage for access to a welcome letter and the online Perceptions of Illness (POI) survey. The welcome letter described the purpose of the study, ensured anonymity and voluntary participation, and informed potential participants that by completing the questionnaire they were providing informed consent to participate.

A convenience sample of students enrolled in psychology classes in a large university in South Korea were recruited to participate in this study. All materials, including the welcome letter and the POI Survey were translated to Korean and back-translated in printed format. As with the U.S. sample, the welcome letter to participants in South Korea described the purpose of the study, ensured anonymity and voluntary participation, and informed potential participants that by completing the questionnaire, they were providing informed consent to participate.

Results

To address the first research question, (i.e., Are causal attributions for illness similar among People of Color in the U.S. and South Koreans?) researcher-provided causes were factor analyzed. A principal-components analysis, with an oblique rotation for simple factor loadings was used to observe whether the factor/principal components could legitimately be considered correlated. Factors were retained with an eigenvalue > 1.00, and items were retained on a factor if the loading was > 0.5 for stronger congruent validity with 25% common variance. These factors rather than the 37 variables were used as dependent variables in the analysis of possible differences in causal attributions for illness for each group and for the combined groups.

The results of the factor analysis of the researcher–provided causes were
categorized in three interpretable factors, (i.e., Lifestyle, Personality, and Supernatural) as shown in Table 1, accounting for 54.5, 55.3, and 55.1 percent of the variance, respectively for People of Color in the U.S., South Koreans, and the combined groups. The correlation among the principal components was similar.

Table 1

Factor Structure.

<table>
<thead>
<tr>
<th>Item</th>
<th>United States</th>
<th>Korea</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lifestyle</td>
<td>Personality</td>
<td>Supernatural</td>
</tr>
<tr>
<td>Diet</td>
<td>.745</td>
<td>.391</td>
<td>.727</td>
</tr>
<tr>
<td>Drug Use</td>
<td>.690</td>
<td>.698</td>
<td>.723</td>
</tr>
<tr>
<td>Virus</td>
<td>.671</td>
<td>.811</td>
<td>.724</td>
</tr>
<tr>
<td>Lack of vitamins</td>
<td>.628</td>
<td>.461</td>
<td>.707</td>
</tr>
<tr>
<td>Smoking</td>
<td>.533</td>
<td>.804</td>
<td>.566</td>
</tr>
<tr>
<td>Drinking</td>
<td>.526</td>
<td>.749</td>
<td>.609</td>
</tr>
<tr>
<td>Emotions</td>
<td>.777</td>
<td>.767</td>
<td>.788</td>
</tr>
<tr>
<td>Worry</td>
<td>.768</td>
<td>.844</td>
<td>.814</td>
</tr>
<tr>
<td>Anger</td>
<td>.749</td>
<td>.749</td>
<td>.759</td>
</tr>
<tr>
<td>Anxiety</td>
<td>.603</td>
<td>.764</td>
<td>.636</td>
</tr>
<tr>
<td>Payback for wrongdoing</td>
<td>.874</td>
<td>.751</td>
<td>.826</td>
</tr>
<tr>
<td>Payback</td>
<td>.830</td>
<td>.724</td>
<td>.781</td>
</tr>
<tr>
<td>Wrongdoing</td>
<td>.791</td>
<td>.815</td>
<td>.775</td>
</tr>
<tr>
<td>Sinful acts</td>
<td>.764</td>
<td>.754</td>
<td>.759</td>
</tr>
<tr>
<td>Evil eye</td>
<td>.719</td>
<td>.670</td>
<td>.694</td>
</tr>
<tr>
<td>Sinful thoughts</td>
<td>.706</td>
<td>.576</td>
<td>.639</td>
</tr>
<tr>
<td>Punishment from God</td>
<td>.702</td>
<td>.664</td>
<td>.670</td>
</tr>
<tr>
<td>Lack of faith</td>
<td>.552</td>
<td>.729</td>
<td>.607</td>
</tr>
<tr>
<td>Cumulative %</td>
<td>0.545</td>
<td>0.543</td>
<td>0.551</td>
</tr>
</tbody>
</table>

To address the second research question, (i.e., Are the ratings of importance assigned to causal attributions for illness similar among People of Color in the U.S and South Koreans?) a two-way analysis of variance (ANOVA)
was conducted with the two groups (i.e., People of Color in the U.S., South Koreans) as the between-subject factor, and causal attributions (i.e., Lifestyle, Personality, Supernatural) as the within-subject factor. The summary statistics of the data are reported in Table 2 below.

Table 2
Descriptive Statistics by Group.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Koreans</td>
<td>139</td>
<td>5.157</td>
<td>0.913</td>
<td>4.799</td>
<td>1.120</td>
<td>3.082</td>
<td>1.109</td>
</tr>
<tr>
<td>US People of Color</td>
<td>160</td>
<td>6.008</td>
<td>0.754</td>
<td>5.580</td>
<td>0.940</td>
<td>3.323</td>
<td>1.461</td>
</tr>
</tbody>
</table>

The main effect of the groups was significant \[ F (1, 297) = 51.46, p < 0.0001 \], indicating that People of Color in the U.S. tend to assign greater importance to the three causal attributions considered together. The main effect of the causal attribution was also significant \[ F (2, 594) = 547.40, p < 0.0001 \]. Subsequent Tukey-Kramer tests revealed that with the two groups combined: (1) lifestyle factors are considered more important than personality factors (95% CL = (0.212- 0.575) or supernatural factors (95% CL = (2.199-2.561), and (2) personality factors were considered to be more important than supernatural factors (95% CL = 1.805 – 2.168).

However, interpretation of the main effects above need to be qualified in light of a significant group x attribution interaction \[ F (2, 594) = 9.35, p < 0.0001 \], meaning that the difference between the groups varies across the causal attributions. People of Color in the U.S assign more importance than their South Korean counterparts to lifestyle factors (95 % CL = 0.539 – 1.163) and personality factors (95% CL = 0.469 – 1.093). The difference between the two groups on supernatural was non-significant (95% CL = -0.070 – 0.553).

The overall ANOVA accounts for approximately 51.6 % of the total variance. Due to the unequal group sizes, it is not possible to provide the precise proportions of the total variance accounted for by the three effects respectively. However, based upon the unique contributions (i.e., Type III Sums of Squares) due to the effects, it is clear that attribution is by far the most influential effect, accounting for at least 45.6% of the total variance, followed by the group effect
of at least 4.10% and the group x attribution interaction of at least 0.8%.

Discussion

The purpose of the present study was to investigate causal attributions for illness among People of Color residing in the United States and South Koreans by comparing patterns of responses regarding their perceptions about the causes of illness. Based on the literature review, it was anticipated that individuals from these culturally contrasted groups would attribute and rate supernatural factors as the most important causes for illness. However, the unexpected and most consistent similarity between the two groups was that supernatural causes for illness were assigned the least importance rating. This rating is irrespective of social class and education reflecting basic cultural values and shared conceptualizations.

Although supernatural attributions rarely may be provided spontaneously in explaining illness, participants in this study willingly attributed supernatural causality when the context was provided. These results confirm previous research suggesting that contextual information plays an important role for individuals in determining the causal explanations for illness.

The findings of this study present a mixed picture. On the one hand, the causes that participants in the two countries ascribed to illness showed substantial overlap, and yielded moderate judgmental agreement. On the other hand, the findings offer evidence for distinctive aspects regarding causes. The participants varied significantly in the attribution of causes as well as the features that were most central to them. A fuller analysis of the distinctive features and ranges of the respective causes would require an in-depth ethnographic study of each culture. However, this was not the intention of the present study which focused on more general implications of the comparative findings.

Perhaps People of Color in the United States attributed higher ratings of importance to lifestyle and personality factors than did South Koreans because they were more exposed to and aligned with Western values and belief systems. Conceivably, People of Color in the United States ascribed to causes that resembled those of the majority population in breadth and composition, given the origin of the nosology in the U.S. and the high visibility of health disparities in its public discourse.

Previously discussed research findings suggest that in cases in which individuals seeking care have different health beliefs than their care providers, these differences play a vital role in self-care, health-seeking behaviors, and
compliance with interventions offered. Modern science and medicine have traditionally rejected the idea of supernatural factors affecting personal health. However, in a globalized world consisting of growing numbers of culturally diverse populations, changes are required in the way training programs prepare health care professionals to address health beliefs. Now there is consensus that the guiding principles for demonstrating cultural competence must include skills, attitudes, and beliefs. At a minimum, the principals need to acknowledge the unique culture-related beliefs, values, and health related behaviors of members of groups in which supernatural causality is acceptable. Being aware of these factors and being prepared to assess and treat individuals from culturally different backgrounds with respect and compassion can make a positive impact on health outcomes.

Training and practice settings need to provide opportunities for health care professionals to become aware of and identify life situations that may impact health related decision-making. Health education needs to be individualized and considerate of cultural differences. Advice and recommendations given should as much as possible be adapted to the desires of the individuals seeking health care assistance. When appropriate, relatives and extended family members should be involved in the process.

Several recommendations are offered for future research. First, the number of participants in this study did not permit an analysis of the variability within and among the cultural groups represented. Future research with larger samples would permit comparisons to strengthen the generalizability of results.

Second, it could be argued that neither of these samples were properly matched nor representative of their cultures. It is true that neither group is really representative of their country as a whole, because they were a select group. Participants in this study were probably better educated and from higher socio-economic groups than the population as a whole. Thus, cultural differences that emerged may be considered to be accentuated in the population as a whole. Samples of individuals with less education and lower annual incomes may possibly yield different results. Additionally, future studies should ensure a more even gender and age distribution.

Third, given that most respondents reported affiliations with varied religions, future research should also address the roles that spirituality and personal religious beliefs about coping may have on health beliefs of individuals across culturally diverse groups. Further, variations exist among immigrants as well as individuals from culturally diverse groups who are exposed to the media and other informational technology, who may attempt to socialize to Western
ways and assimilate and others who may wish to retain traditional health values, beliefs and practices. Therefore, future studies should give consideration to the role that acculturation, assimilation and exposure to informational technology may have on perceptions related to causal attributions of illness.

Although the present study extends previous research on cultural diversity in causal attributions for illness by intentionally drawing from a larger racially, ethnically, and linguistically diverse sample than in other studies, it is not without limitation. The results are limited to the individuals who volunteered to participate in this study and may not apply to other People of Color in the United States, other South Koreans or individuals from other culturally different groups. Selection bias may have also influenced the results, particularly since individuals who chose not to participate in this study may have responded differently.

In this study, as is typical in cross-cultural work, there may be problems even without involving translations, concerning differences in word meanings. Although considerable care was taken in translating the survey, subtle differences might distort findings regarding the distinctive features of the respective causes. Despite the above-mentioned limitations, the results from this study add to the body of knowledge examining beliefs about causes of illness as mediators of health-related behaviors in a cultural context.

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In the Territory of Guam, a new grassroots education reform movement has begun among education professionals. The University of Guam was awarded the Content Area Specialized Teachers (CAST) grant project in May 2008 aimed at meeting two major goals. The first goal is to design, initiate, implement, and manage an effective professional development program for grades K-12 teacher leaders that will (a) strengthen content knowledge in Language Arts, Mathematics, Science and Social Studies, and (b) enhance pedagogical content knowledge and skills for instructional support. The University of Guam has entered a collaborative partnership with educators from the University of Hawai‘i to offer training workshops to prepare teachers to be content and pedagogical leaders in Guam. As part of this process, CAST participants were surveyed to aim their perspectives on teachers’ professional development needs in Guam. Participants perceived the need for additional professional development in content knowledge, content strategies, and teacher leadership.
Tsunamis necessitate the need to rebuild and renew. Education reform movements seem to engulf schools like a tsunami. Statistics from standardized tests and international comparisons have been used to launch waves of reform in U.S. schools. Since the shock of Sputnik in 1957, the practice of American schooling has fallen under public and legislative scrutiny. The 1983 National Commission on Excellence in Education *A Nation at Risk*, the 1994 *Goals 2000: Educate America Act*, and the *No Child Left Behind Act* (NCLB) in January 2002 are examples of national reports that have swept over the schools and changed the landscape of education over the past two decades. Since the 1980s, the resulting educational reform movements have progressed through stages that have been summarized as the excellence movement, the restructuring movement, the standards movement and the accountability movement (Hunt, 2008).

**Education Reform in the Territory of Guam**

In the past two decades, there have also been numerous educational reform movements in the Asia-Pacific Regions (Cheng, 2001; Cheng & Townsend, 2000). Nearly all countries in the Asia-Pacific Region are engaged in some aspect of school restructuring and education reform in an attempt to prepare students to compete in the technology-rich, knowledge-based global economy. Asia-Pacific Region geographic school reform movements and political U.S. educational policies influence the Territory of Guam.

Guam is the largest island in Micronesia. The Territory of Guam is an island in the western Pacific Ocean that is an organized, unincorporated insular area of the United States. The island was taken from Spain by the United States during the Spanish American War in 1898. The anticipated U.S. military expansion on Guam during the years 2010-2014 is expected to cause a dramatic population increase that will significantly impact changes in education and infrastructure. Consequently, U.S. education reform movements predominantly influence the public school system in the Territory of Guam.

Beginning in 2003, school districts in the Territory of Guam experienced a wave of direct instruction in English and Mathematics. Direct instruction is described as a method of teaching that provides teachers with field-tested and research-based scripted lesson plans delivered in a structured classroom environment. *The Reading First* direct instruction program was implemented in all 25 of 26 Guam Public School System (GPSS) elementary schools beginning in the 2003-2004 academic year to address the progressive decline of local public school students’ *Stanford Achievement Test, Ninth Edition, SAT-9* test results. Test results consistently placed the majority of Guam’s public school
students at levels below national counterparts. Guam educators hoped the five-year implementation of the direct instruction reading program would improve students’ reading skills at all grade levels from Kindergarten through grade 5.

Direct instruction was designed to teacher-proof curriculum and instruction as a means of uniformly raising content standard achievement for all students. The No Child Left Behind Act (2002) focused school improvement and staff development to areas specifically tested to determine if schools were making Adequate Yearly Progress (AYP). AYP is primarily determined through state-developed and commercially prepared standardized tests. Researchers found that 71% of the elementary schools in the Center of Education Policy Study (2006) had decreased or even eliminated time devoted to subjects other than language arts and mathematics in order to maximize time for instruction in these tested AYP subject areas.

**Funding and Legislation**

Legislation and funding serve as major catalysts for education reform movements. The No Child Left Behind (2002) legislation has served as the driving force of school restructuring and professional development of highly qualified teachers across schools in the United States and in the Territory of Guam. The NCLB (2002) mandates are accompanied by some increased funding but also deliver a series of punitive sanctions if prescribed quotas are not met.

Federal funding from sources like Grants 2000 have historically infused school improvement and staff development efforts. There is hope that President Obama’s economic stimulus plan will revitalize and renew school districts with a proposed $150 billion dollars of new federal spending invested in the Department of Education budget. In addition to federal funding, education grant monies further support education reform movements.

**The Content Area Specialized Teachers (CAST) Grant**

In the Territory of Guam, a new grassroots education reform movement has begun among education professionals. The University of Guam was awarded the Content Area Specialized Teachers (CAST) grant project in May 2008 aimed at meeting two major goals. The first goal is to design, initiate, implement, and manage an effective professional development program for grades K-12 teacher leaders that will (a) strengthen content knowledge in Language Arts, Mathematics, Science and Social Studies, and (b) enhance pedagogical content knowledge and skills for instructional support. The main objective is to strengthen content knowledge of K-12 teacher leaders and develop
their content understanding across the K-12 spectrum through the CAST professional development model. The CAST project’s second goal is to design, initiate, implement, and manage an effective professional development program for teacher leaders that will improve leadership practices, all aimed at sustaining positive change. Practicing K-12 teacher leaders in Guam will develop the skills and dispositions to deliver professional development opportunities to their colleagues across the K-12 spectrum including Language Arts, Mathematics, Science and Social Studies. The CAST project respectfully returns curriculum and instruction decisions to education professionals who have content expertise and pedagogical knowledge and skills for teaching in a unique cultural milieu.

**Teacher’s Impact on Student Learning**

Reform movements will fail without teacher buy-in, training and support. Reams of educational research whisper the simple truth: quality teachers positively impact students’ achievement levels. Teachers are the most significant influence on student achievement (Darling-Hammond, 1997, 2000; Education Commission of the States, 2000, 2003; Education Testing Services, 2004; Rice, 2003; Sanders & Rivers, 1996).

An effective teacher is the single most important factor affecting student learning. It’s more important than standards, more important than class size, more important than how much money is spent. Each of these is significant, but the quality of teaching dwarfs them all (Education Commission of the States, 2000, p. 1).

The United Nations Educational, Scientific and Cultural Organization (UNESCO) International Institute for Educational Planning (2007) summarizes global perspectives on teacher learning and professional development. The UNESCO (2007) report states that no reform measure can be effective without the active support of teachers. “The teacher is at the epicenter of the learning process; and learning therefore depends first and foremost on the quality of the teacher” (Schwille & Dembele, 2007, p. 15). There is general agreement that continuous training and professional development in the areas of content knowledge and the teacher’s competence in transmitting this knowledge to different students are essential for improved academic performance across global classrooms.

The goals of the CAST project are aligned with research recommendations for continuous training and professional development of teachers’ content knowledge and pedagogical skills. The University of Guam has entered a
collaborative partnership with educators from the University of Hawai‘i to offer training workshops to prepare teachers to be content and pedagogical leaders in Guam. As part of this process, CAST participants were surveyed to gain their perspectives on teachers’ professional development needs in Guam.

**Methodology**

**Background**

The Guam Public School System (GPSS) is a single unified school district consisting of twenty-five elementary schools, seven middle schools, four high schools and an alternative school that serves over 30,000 students. In Spring 2008, the University of Guam (UOG) recruited five content area specialists from the University of Hawai‘i (UH) as consultants to the GPSS and project CAST. The UH team was charged with providing professional development (PD) to 29 Guam CAST teachers in science, social studies, English/Language arts, and mathematics. The PD sessions were designed with a two-fold purpose: (a) to increase CAST members’ subject area content and pedagogy knowledge and skills and (b) to develop CAST members’ content expertise and leadership skills to a level where they would be able to serve as teacher leaders and support personnel for the GPSS schools. All CAST teachers were expected to develop a K-12 perspective of the quality content and promising pedagogical practice for their content area.

**Demographics**

The CAST cohort consisted of 29 teachers with 23 (79%) responding to the demographic portion of the survey. CAST teachers ranged in age from 20-70 years old, with the majority (83%) falling in the 31-60 year-old range (Figure 1).

![Figure 1. CAST participant ages.](image-url)
from 0-35 years of experience, with no less than two and no more than five teachers being part of any five year grouping (Figure 2).

CAST group composition
All CAST teachers were employed by the GPSS system. Participants were chosen from four content areas and elementary, middle and high school placements. Ten of the twenty-two responding CAST teachers (43%) are currently teaching science, while seven (32%) are teaching math, four (17%) are teaching social studies, and two (9%) are teaching language arts (Figure 3).

With respect to grade level taught, four of the responding 22 teachers taught elementary school (grades 4 & 5), eleven taught middle school (grades 6, 7, 8) and seven taught high school (grades 9 through 12) (Figure 4).
Procedure

The CAST professional development sessions occurred in three phases over a period of six months: (a) a face-to-face five day session in July with two 90 minute Content and Pedagogy sessions and one 90 minute leadership session each day, (b) online follow-up sessions with each content group from August to December, and (c) a face-to-face follow-up session at the end of December. CAST members were surveyed throughout the project to determine their impressions of the PD.

Each CAST consultant employed three methods of data collection during their sessions: (a) Unstructured group interviews, (b) Participant observation, and (c) Semi-structured group interviews with open-ended questions.

Unstructured group interviews.
CAST members were asked to describe their experience as a cohort member in a free flowing discussion format. CAST consultants listened to the responses and asked probing questions to gain a deeper understanding of the participant’s views of the PD sessions.

Participant observation.
CAST members were observed during the PD sessions to determine how they applied the new instruction, what parts of the instruction they were having problems with, and what parts of instruction they could most easily apply in their classrooms. CAST consultants noted similar and disparate events for use in the coding process.

Semi-structured group interviews with open-ended questions.
CAST members were asked during each training session for their feedback on the sessions: (a) what they liked, (b) what they found useful, (c) what could be applied in their classes, and (d) what they would like more instruction on. CAST consultants listened to the responses and asked clarifying questions if responses were unclear or incomplete.
The following two methods were used at the end of the PD sessions: (a) Focus groups and (b) Questionnaires.

**Focus groups.**
During the final stage of the week long CAST PD, the content area groups were brought together to discuss the strengths and weaknesses of the PD sessions. CAST consultants listened to the responses, took notes, and moderated the discussions. CAST group members were encouraged to freely express their opinions and offer detailed responses to the questions asked.

**Questionnaires.**
During the final stage of CAST PD in December, the entire group was brought together to discuss the strengths and weaknesses of the PD sessions. CAST consultants administered a survey (Appendix A) to determine what areas of the PD were beneficial and what needed to be improved upon.

**Evaluation of the Data**
The raw data was examined and problematic data such as incomplete responses (e.g., survey not fully completed) or questionable entries (e.g., inconsistent responses) were removed from the sample.

**Analysis of the Data**
A descriptive method was used to analyze the data in order to provide a summary of the information gathered and to describe the results obtained. Visual representations including charts and simple statistical measures were used to obtain a feel for how the respondents viewed the PD sessions. Written responses to the surveys, verbal responses in interviews, and responses recorded via field notes were recorded verbatim.

**Coding**
A grounded theory approach was used to code the open-ended data (Strauss & Corbin, 1990). All participant responses were read and re-read by three CAST consultants who independently discovered the properties associated with the data. The CAST consultants then shared their notes with one another, discussed their findings, and negotiated the mutually agreed upon findings.

Open coding was used to identify and categorize the relationships described by the data. CAST consultants used the question “What are the perspectives of the CAST members on their perceived professional development needs and their satisfaction with the CAST workshops” as the lens through which they examined the open-ended survey responses and textual material. As
relationships in the data were discovered, axial coding was used to relate these relationships to a general framework. The final step in the coding process involved selective coding, where the CAST consultants examined all of the themes that emerged from the data and determined the core theme that best represented all of the data. This core theme that became apparent from the data was that while the PD sessions were deemed to be valuable for the CAST participants, there is a need for even more content area instruction and strategies that can be applied in their classrooms and for PD. For example, while 96% of the CAST participants found the ideas, content and strategies presented in the PD sessions to be either “useful” or “very useful”, the majority of respondents wanted even more strategies in their content area and strategies for professional development. The five general themes that emerged from this analysis can be found in the Results section.

**Data Triangulation**

The data was triangulated in two ways: (1) Investigator triangulation, where multiple CAST consultants observed and analyzed the data at every phase of the process, sharing their findings and negotiating the final outcomes; and (2) Methodological triangulation, where multiple methods: (a) Unstructured group interviews, (b) Participant observation, (c) Semi-structured group interviews with open questions, (d) Focus Groups, and (e) Questionnaires, were used to collect the data.

**Data Analysis**

*Likert-type scale responses.*

The survey contained five forced-choice items that required a likert-type scale response. CAST members were asked to circle the response that described (a) how ready they feel to begin offering professional development, (b) how closely the content of CAST aligned to the standards, (c) if their participation in CAST met their expectations, (d) how likely are they to share the ideas gained through CAST participation with others, and (e) how useful were the CAST ideas, content, and strategies in their future professional development as teachers. The choices varied for each question and are identified (Figure 5).

Responses to the first likert-scale question revealed that 37.5% of the CAST members feel ready to begin offering professional development, while only 25% indicated they are very ready to conduct professional development to their colleagues. Only 12.5% indicated they mostly unsure about offering professional development (Table 1).
For the second likert-scale question, “How closely was the content of CAST aligned to the standards,” 58.3% reported very closely, while no one selected mostly not at all or none at all. Interestingly, 20.8% indicated they are unsure if the content was aligned to the standards (Table 1).

“Did participation in CAST meet your expectations meet your expectations,” was the third likert-scale question. In response to this question, 62.5% indicated that participation in CAST was very useful. 29.2% selected that their participation was useful (Table 1).

Likert-scale question four asked CAST members how likely they are to share ideas gained through their participation in this program. Overwhelmingly, 87.5% responded that they are very likely to share their new ideas with other teachers. Only three respondents, or 12.5%, stated they were likely or unsure if they would share ideas (Table 1).

The final likert-scale question in the survey focused on how useful the CAST ideas, content and strategies are to their future professional development as teachers. In response to this question 75% said they found the information very useful while 20.8% indicated it was just useful (Table 1).

**Rank-Order Responses**

The survey contained one question related to what CAST members would like to receive more training in. Participants in the survey were asked to rank, by priority, three choices for more training. The choices given were content knowledge, instructional strategies, and leadership. The ranking was done with 1= most important, 2= somewhat important, and 3= least important.
According to the responses, there was no clear majority in their answers. Of all 24 respondents, participants ranked Instructional Strategies as number one, Content Knowledge as number two, and Leadership as number three priority for future choices in training.

### Table 1

<table>
<thead>
<tr>
<th>Questions</th>
<th>Range of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1: How ready do you feel to begin offering professional development to your colleagues?</td>
<td>Very Ready</td>
</tr>
<tr>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Question 2: How closely was the content of CAST aligned to standards?</td>
<td>Very Closely</td>
</tr>
<tr>
<td></td>
<td>58.3</td>
</tr>
<tr>
<td>Question 3: Did participation in CAST meet your expectations?</td>
<td>Very Useful</td>
</tr>
<tr>
<td></td>
<td>62.5</td>
</tr>
<tr>
<td>Question 4: How likely are you to share ideas you gained through CAST participation with others?</td>
<td>Very Likely</td>
</tr>
<tr>
<td></td>
<td>87.5</td>
</tr>
<tr>
<td>Question 5: How useful are the CAST ideas content and strategies in your future professional development of teachers?</td>
<td>Very Useful</td>
</tr>
<tr>
<td></td>
<td>75</td>
</tr>
</tbody>
</table>

### Open-Ended Responses

The survey contained six open-ended questions. One question related to why teachers chose to participate in CAST. The second question what they found to be most beneficial in CAST. A third question asked for suggestions on improving future CAST workshops. Question four asked how participating in CAST has helped them to feel more confident about offering professional development to colleagues, while the fifth question addressed the issue of
what type of follow-up or support would they like to receive that would be most useful. The final question asked CAST members if they are experiencing any frustrations in trying to implement positive changes within their work environment.

The responses for the open-ended questions can be broken down into themes. These themes became apparent after coding each response to each question and grouping them into common categories. By investigating the themes, the CAST teachers are better able to adapt future presentations in a way that is most beneficial to all CAST cohort members.

Open-ended Question 1.

Four themes emerged from answers (Table 2) to address the first open-ended question, “why did you choose to participate in CAST”. The first prominent theme was that CAST members (14 respondents) wanted to learn more strategies for professional growth. A science teacher with 13 years of teaching experience quotes, “I enjoy learning about new ways that I can enhance teaching and learning in my classroom.” A math teacher with one year of teaching experience stated, “I was informed this would jump start my career as a professional.” The second theme six CAST members identified as reasons to join CAST was that it would be used for credits necessary for certification renewal. Four members stated that it was peer pressure that prompted them to join, while two CAST members stated, “I could be a part of change.”

Open-ended Question 2.

The second open-ended question, “What did you find most beneficial in CAST”, generated an array of themes. These themes can best be explained through a table (Table 3).

Table 2
Reasons for Participating in CAST.

<table>
<thead>
<tr>
<th>Emergent Theme</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategies for Professional Growth</td>
<td>14</td>
</tr>
<tr>
<td>Credits</td>
<td>6</td>
</tr>
<tr>
<td>Peer Pressure</td>
<td>4</td>
</tr>
<tr>
<td>Agents of Change</td>
<td>2</td>
</tr>
</tbody>
</table>
After the Wave of Direct Instruction: The CAST Initiative in Guam

Table 3
CAST Members Perceptions of What They Found to be Most Beneficial in CAST.

<table>
<thead>
<tr>
<th>Emergent Theme</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategies In Content Area</td>
<td>11</td>
</tr>
<tr>
<td>Strategies for Professional Development</td>
<td>7</td>
</tr>
<tr>
<td>Interaction with Colleagues</td>
<td>5</td>
</tr>
<tr>
<td>Professors from Hawaii who conducted CAST</td>
<td>3</td>
</tr>
<tr>
<td>Strategies to use Thinking Maps</td>
<td>2</td>
</tr>
<tr>
<td>Encouragement from others</td>
<td>1</td>
</tr>
<tr>
<td>To Implement Change</td>
<td>1</td>
</tr>
<tr>
<td>Credits for Recertification</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. The total number of respondents is not equal to 100% as some respondents identified more than one theme

Open-ended question 3.
“Needs to be more content-based”, emphasizes the dominant theme for question three. This question asked CAST members to offer suggestions for improving future CAST workshops. Thirteen cohort members specifically stated that they would like more content strategies. Three members of CAST identified the need for more follow-up, and two participants said there were no suggestions for improvement (Table 4).

Table 4
Suggestions for Improving Future Training

<table>
<thead>
<tr>
<th>Emergent Theme</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategies In Content Area</td>
<td>11</td>
</tr>
<tr>
<td>Follow-up</td>
<td>3</td>
</tr>
<tr>
<td>No Suggestions</td>
<td>2</td>
</tr>
</tbody>
</table>

Open-ended question 4.
The fourth open-ended question asked, “Has your participation in CAST helped you feel more confident about offering professional development? How has it helped you?” The overwhelming majority of CAST participants (16) identified the major theme for this question: yes, I feel more confident to share ideas with colleagues (Table 5). A 15 year science teacher stated, “yes it has, because I feel that being with the CAST has made me realize that there is so much that needs to be done for our teachers and our kids...there just aren’t enough people who are committed to finally do something about improving our...
schools.” In addition, five CAST members stated they had gained a little more confidence in offering professional development, one stated they feel the same as far as their confidence, one said they needed more development, and one said “not really”.

Table 5
CAST Members Confidence Level after Training.

<table>
<thead>
<tr>
<th>Emergent Theme</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased Confidence</td>
<td>21</td>
</tr>
<tr>
<td>Same Level of Confidence</td>
<td>2</td>
</tr>
</tbody>
</table>

“What type of follow-up or support to the CAST workshop would be most useful to you,” was the fifth open-ended survey question. Seven prominent themes emerged from the CAST responses. These themes are displayed in Table 6.

Table 6
Needs of CAST Members for Follow Up Sessions.

<table>
<thead>
<tr>
<th>Area of Follow-up</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAST should meet every year</td>
<td>7</td>
</tr>
<tr>
<td>More instructional strategies</td>
<td>5</td>
</tr>
<tr>
<td>Technology integration</td>
<td>3</td>
</tr>
<tr>
<td>More help with implementing professional development</td>
<td>3</td>
</tr>
<tr>
<td>Feedback from instructors</td>
<td>3</td>
</tr>
<tr>
<td>Sharing instructional strategies from other content areas</td>
<td>2</td>
</tr>
<tr>
<td>Constructive criticism from instructors</td>
<td>1</td>
</tr>
</tbody>
</table>

The final open-ended question of the survey asked CAST members if they are experiencing any frustrations in trying to implement positive changes within their work environment. Of the members who said they are frustrated, they identified four areas of difficulty. These difficulties include (a) time for professional development, (b) funding for professional development, (c) colleagues are resentful of professional development or don’t understand why they have to make changes, and (d) lack of support from their administrators. Five CAST members said they aren’t experiencing any frustrations.
Discussion

The purpose of the CAST grant is two-fold. The first goal is to help cohort members strengthen their content knowledge and enhance their pedagogical content skills to become K-12 teacher leaders. The second objective is to help the cohort members improve their skills in implementing professional development. This discussion of data investigates how the implications of the findings relate to the purpose of the CAST grant.

In regards to helping CAST members strengthen their content knowledge in language arts, math, science, and social studies, the data indicates that the strategies gained in the content areas was beneficial to the cohort members. As one science teacher with 15 years of teaching experience stated, “It was beneficial learning more strategies, ways of improving myself as a teacher, and gaining more confidence.”

However, the CAST members also expressed the desire to have more workshops be content-based. “Keep funding the cadre members. Seriously still would like training with more instructional strategies for my content area,” was a comment given from a social studies teacher with 28 years of teaching experience. This desire for more sessions to be content-based was also apparent in that 37.5% of the cohort ranked content knowledge as an area to receive more training in.

To determine if the second goal of CAST is being met, to develop the skills and dispositions to deliver professional development opportunities across the K-12 curriculum, the data indicates that the CAST project is on its way to achieving this goal. After the initial CAST workshop in the summer of 2008, 87.5% said they are likely to share the ideas they have learned, yet many identified professional development as an area of frustration. CAST members also would like to see more workshops offered in this area.

Recommendations

The CAST facilitators have identified a need for further research to determine if the goals of CAST are being better met once the third workshop commences in June 2009. In order to get this data a second survey will be distributed to see if the themes from the data remain the same or if they change pending the outcome of the summer session. In addition, data will be broken down by content area to determine if certain content groups have different perceptions of their workshop sessions.
The summer 2009 workshop will be eight days in length. The first three days will emphasize additional instructional strategies for all content areas and content-specific planning time for the implementation of professional development to occur the following five days. The CAST facilitators will co-plan with the CAST members to plan content-specific strategies and pedagogy to share with other K-12 educators working in Guam.

It is also recommended that CAST facilitators work with the cohort to find ways to build bridges between school administrators and the new ideas associated with this professional development. It is suggested that during the final five days of the summer 2009 session, that time be set aside for representatives of the CAST initiative to meet with current school administrators and try to find ways to incorporate the goals of CAST into the upcoming school year.

References


Information for Contributors

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Copies required: electronic
Type of review: blind (2 reviewers)

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In a separate file include an abstract (approximately 100 words) and the names(s) and address(es) of the author(s) and institutional affiliation(s). Footnotes are not permitted. Make figures available as .jpg or .eps files.

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