# PARTICIPATION AND RETENTION WITHIN A PREDOMINANTLY ASIAN ADULT ESL POPULATION IN HONOLULU, HAWAII

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## ABSTRACT

This study quantifies adult student participation and retention in an English as a Second Language (ESL) program in Honolulu, Hawaii. Within the prior literature, American quantitative participation studies often under-represent non-Spanish or English-speaking populations. The retention literature is commonly qualitative and considers binomial retention. Using data gathered by the institution's testing system, the discussion in this paper therefore first asks, how does the observed population ($N = 918$; $n = 594$), which is largely Asian, compare to the national population? Second, what predictors can be identified relevant to multinomial retention? In brief, the population is younger and better educated, but less often employed than the national population. Logistic regression analyses indicate that class type and prior diploma predict withdrawal within two weeks with 68.60% accuracy. However despite significant model fits ($p < .005$), overall predictive ability ranged between 51.30% and 66.00% for assessed models.

## INTRODUCTION

This study reports on Asian adult English as a Second Language (ESL) participation and retention within a population in Honolulu, Hawaii. Particularly the Asian population is compared to the national adult ESL population, to fill a gap in American participation literature. Additionally, retention is treated as a multinomial variable to better clarify late enrollment, early withdrawal, and disruptively brief attendance. The following literature review contextualizes the study's concerns and frames the research questions. The review will also describe the inferential techniques applied to the data.

*Second Language Studies, 23*(1), Fall 2004, pp. 1-26.

### *National Adult ESL Participation*

This section summarizes observations of the national adult ESL population in the US, of which the studied population is a component. The section ends by reviewing an important gap in the research, under-representation of Asian students in the US population, and proposes one of the two research questions investigated by this study. The studied population is suitable to fill gaps in the study of Asian adult ESL students because Honolulu and the studied population are respectively 68% (US Census Bureau, 2000) and 94% of Asian ethnicity.

The US Department of Education provides an important source of American adult education data with its National Education Household Surveys (NHES) that were created to serve a Congressional information collection mandate (Brick, 1996, pp. 1-2)[1]. Given by telephone in both English and Spanish, these studies are also valuable in that their populations are impressively large, NHES: 99 included 194,625 participants (Kwang & Creighton, 1999, p. 12).

Silva, Cahalan, and Lacireno-Paquet (1998, p. 3), in a US Department of Education analysis of national adult education, divided adult education into four types: English as a second language (ESL), basic skills and general equivalency diploma, credential related, and work and career related. Fitzgerald (1995), reviewing the US Department of Education commissioned National Evaluation of Adult Education Programs, found that ESL participation is greater than any other component of adult education. Fitzgerald (1995) further found that 21% of ESL programs are the prominent component of their institutional programs.

Kwang and Creighton (1999, p. 12) note that for NHES: 99, current ESL students were an estimated 1% of all adults in the US. Subdividing all adults by highest diploma, 3% of adults with less than a high school (HS) diploma had attended ESL, 1% had an HS diploma and ESL, 1% had some postsecondary education and ESL, and 1% had a baccalaureate or higher degree and ESL.

Fitzgerald (1995) found that within the American adult ESL population, 19% are Asian, 85% in major metropolitan areas, 72% in the Western US, 98% foreign born, 73%

[1] In the literature particular administrations of the NHES are given by suffixing NHES with a colon and a two-digit code representing the year. That nomenclature is adopted here.

initially enroll at the lowest level, 48% employed, 33% not in labor force, and 50% completed at least high school. Creighton and Hudson (2002, p. 5), summarizing cumulative data from NHES administrations from 1991 through 1999, calculated that 22% of adult ESL students were Asian.

Kwang, Collins, and McArthur (1997, p. 2) found the candidate ESL population as the NHES: 95 reported to be 12 million adults who do not speak English in the home. Reviewing cumulative NHES data from the 1990's, Creighton and Hudson (2002, p. 24) and McArthur (1998) each note that 11% of that ESL candidate population attended ESL courses, while Kwang et al. (1997, pp. 3-4) reported that 10.8%, roughly 1.3 million, of the adult ESL candidate population took an ESL class in the 12 months preceding their survey response. Kwang et al. (1997, p. 5) further reported that 58% of adult ESL students (about 754,000) are studying ESL without it being a college requirement.

Summarizing factors affecting participation, Henry and Basile (1994) include age, gender, ethnicity, education, occupation, employment status, course length, and course meeting time. Among those taking ESL courses outside of a college program, "communicative concerns" was the most often cited reason for participation (29%; Kwang et al., 1997, p. 5). McArthur (1998) notes that among NHES: 95 ESL candidates without participation in the last 12 months but who are "interested," the most represented group were ages 26-45, claim to read English less than "very well," and have immigrated within the past 25 years.

Kwang et al. (1997, p. 4) determined that the following NHES: 95 respondent characteristics were significantly related to ESL participation in the prior 12 months: age, educational attainment, length of US residence including as native born Americans, and self-reported English reading ability. Regarding each of those features, Kwang et al. (1997, pp. 4 & 11) report that 31.8% of ESL participants were under age 45, 14.3% had a high school diploma, 58.5% had lived in the US for less than six years, and 15% felt that they do not read well. Low household income, Spanish use in the home, and employment status were not found to be significantly associated with participation (Kwang et al., 1997, p. 8). Among adult ESL participants, 37.1% engaged in programs with zero personal monetary expenses (Kwang et al., 1997, p. 16, table 3). Creighton and Hudson (2002, p. 4) note that from 1991-1999, 89% of ESL participants were under age 44, 18%

were unemployed, and nearly half had no high school diploma, but 23% had some postsecondary degree.

Although the NHES and other national surveys provide important data, there are particular problems with them. Specifically, as Silva et al. (1998, p. 2) note, survey design has a strong influence on participation rates. For example, the NHES may under-represent non-English/Spanish speakers (Creighton and Hudson, 2002, p. 7; McArthur, 1999; Kwang & Creighton, 1999, p. 2). Kwang et al. (1997, p. 8) illustrate the gravity of this issue when they note that there was only a 28% survey completion rate for ESL candidates not speaking either English or Spanish in the home. Unfortunately, such omissions run through much of adult education. For example Skilton-Sylvester (2002, p. 23) notes that the Equipped for the Future (Stein, 2001) standards use worker and citizen roles that were decided apart from adult ESL learner input, particularly that of Asian students. The difficulties from such under-representation are further compounded in the studied context because the majority of the Honolulu population is Asian, to an extent well above the national average (68% in Honolulu vs. 4.8% nationally**,** United States Census Bureau, 2000). Therefore the first research question is:

1. To what extent can the studied population fill knowledge gaps regarding Asian adult ESL participants?

***Retention***

This section reviews retention and offers an additional research question. Pre/post-testing or repeated linguistic assessment measures are also described because the data collection context in this paper was centered on such an approach.

Kerka's (1988) review of adult student retention research identified the following background factors affecting retention: prior education, age, and gender. Fitzgerald (1995) names the following factors as increasing retention: active use of support services such as counseling and transportation, attendance during the day versus the night, and use of computer assisted learning labs or also independent study. Brod (1995) organizes factors affecting urban literacy program retention into personal and program types. Personal factors include affective state, scheduling concerns, and personal relationships.

Program factors include resource availability, placement concerns, lack of peer community, and curricular relevance.

Skilton-Sylvester (2002, p. 10), interpreting adult ESL retention for Cambodian women in the US, constructs a model where ESL participants react in relation to forces beyond internal motivation including employment and family pressures. Such an approach is useful because, as Belzer (1998) indicates, student absence is not simply a case of dropping out but of changing attendance patterns in relation to other factors; often students plan to return to the institution in later semesters. It should be noted that one effect of fluid attendance rates is that, in practice, one cannot collect exit data because exit dates are only known in retrospect.

The reporting requirements of the No Child Left Behind Act (NCLB; Bush, 2002) have been applied to federally funded adult ESL, ultimately guiding the studied institutions to use the Comprehensive Adult Student Assessment System (CASAS) testing system. The CASAS system is a traditional intervention study model (Brown & Hudson, 2002, pp. 225-230) using pre- and post tests to measure student gains according to established criteria. A benefit of the CASAS system is that it collects student background data and can provide indication of student drop times via test date records.

Although extremely informative, the retention literature appears to benefit less frequently from quantitative approaches, including consideration of retention as multinomial. For example the studies cited in this section are qualitative with the notable exception of Fitzgerald (1995) who was actually concerned with participation, which is often treated quantitatively. Additionally, the retention literature commonly considers retention as a binomial variable, rather than as a phenomena allowing for withdrawal at different times. Because of the host institution's implementation, described later, this study will be able to consider retention as a multinomial factor. Therefore this study will attempt to answer the following:

2. What factors can be quantitatively identified as predictors of retention as a multinomial factor?

### *Logistic Regression*

Before beginning the study, this final literature review section introduces logistic regression, the inferential statistical method adopted for this study. Regression methods, which attempt to graph outcome fluctuations to a straight line, are often used in the behavioral sciences. Regarding ESL participation, one needs to use a special class of regression methods because, as Tikkanen (1998) demonstrated, methods insensitive to variable interaction effects neglect important aspects of participation data.

Logistic regression is however capable of including interactions among independent variables (Tabachnick & Fidell, 2001, pp. 519-520). Therefore logistic regression has become prominent in ESL analyses, for example Creighton and Hudson (2002, p. 41) used two step-wise, or iterative and variable-additive, logistical regression models on NHES: 99 data; the first model included all adults while the second focused on employed adults. McArthur (1998, p. 4) also used logistic regression in studying NHES data.

One practical concern with logistic regression is that the number of variable permutations increases with each added variable in a given model, multiplying the opportunities for low observed frequencies of test cases. When observed frequencies are low, one has three options: accept low power, collapse factor levels, or use a goodness of fit test that does not utilize expected frequencies (Tabachnick & Fidell, 2001, pp. 522 & 537). One such goodness-of-fit test is reported in the "Model Fitting Information" table given by SPSS, particularly its $X^2$ result (Tabachnick & Fidell, p. 538). Interpretation of $X^2$ significance in this study was aided by the critical value table provided by Gravetter and Wallnau (2004, p. 699).

## METHOD

### *Population*

The studied population is composed of ESL students at the McKinley Community School for Adults located in central urban Honolulu, Hawaii during fall 2003. The institution was founded in 1948 and is currently supported by state and federal funds. In accordance with its legislative mandate and budgetary stipulations, ESL education is

offered without fee (excepting textbook fees, which may be subsidized in some cases). Enrollment is offered throughout the semester.

The survey focuses on self-identified Asian students who have uncorrupted data and who sat for at least one CASAS test, with stratification by time of program entry and time of class. Regarding size, the total population that sat for at least one test was 918, which had 594 complete data records, including 560 Asian students. Further description, including factor level frequencies for seven different population samples, is given in the results section. Tables 1 and 2, which describe the population numerically, are held until the results section so that transformations applied to the data can be described first.

Each member of the population is characterized by institutional and background factors describing the student. The institutional factors are date of entry, number of tests, class level, and class time. Date of entry was collected as a date. However the dates were ambiguous because they could have been recorded on one of two different occasions: at formal registration or on the test date. Therefore the dates were converted to represent the module of entry, a unit denoting a two-week period adjusted for holidays. As used by the institution, a module is specifically 10 instructional sessions of three hours for a daytime class and eight sessions of 2.5 hours for an evening class. The number of tests taken was treated as the outcome variable for the logistic regression and was either 1, 2, or 3. Because of the method of test provision, sitting for one test indicates 1 module of attendance, two tests indicate 3 modules, and three tests indicate 5 modules.

The class levels were as follows, with their US National Reporting System designation given in parentheses: ESL-1 (beginning, pre-literacy, and literacy, the latter also optionally bilingual with Chinese, Korean, or Vietnamese), ESL-2 (low intermediate), ESL-3 (intermediate), ESL-4 (high intermediate), ESL-5 (low advanced), and ESL-6 (advanced). Class times were morning, afternoon, and evening.

Background factors include all remaining data points: gender, age, highest grade level, highest diploma, native language, labor status, and whether educated in the US. Level of prior schooling was collected as grade level number. Diploma values were none, GED, High School, Technical Certificate, A.A./A.S., four-year college, graduate studies, and other. Reported native languages were: Chinese, English, Farsi, Korean, Russian,

Spanish, Tagalog, Vietnamese, and "other." Labor status included employed, unemployed, not seeking employment, and retired.

### *Apparatus*

The analysis method used three data management systems. Data were collected using the *CASAS TopsPro* system, that system exported Microsoft *Excel* (Mac OS X) compatible data that were used for collation and transformative coding, and then the *Excel* data were analyzed using *SPSS* (version 11, Mac OS X). This study counts participation in multiple-choice reading tests, although there are also listening tests conducted in ESL-1 through ESL-3. Although the prior semester included exploratory piloting, the Fall semester 2003 saw the first institution-wide piloting of the system that included three test periods in all classes. The primary form of faculty training for the studied period was through text memorandums.

CASAS data are collected in class using Scantron compatible sheets. There are three forms used in the CASAS system. Entry forms are used to collect background data on the student and are generally begun on registration and completed on the first test date; therefore a student's CASAS entry date may be either their registration or first test date[2]. Update forms are used for exit data, including personal goal achievement and hours of instruction, these are completed on the last test date or, in the case of attrition, by the instructor after the semester. Finally test sheets provide performance data and are completed on the date of each particular test. This study uses data from entry and test sheets. The exact data used in the study are detailed in the next section, after description of collection and transformation procedures.

### *Procedure*

Because of the fluid nature of enrollment, three test sessions were provided in the semester; it was hoped that this would increase the number of paired tests. Each test was also administered over an entire module to ensure participation by students who might otherwise have missed a single date. In practice, this meant that one day was given over

[2] There are of course precise registration and attendance records, however they are tracked by a computer system segregated from the CASAS system by litigation.

to a class wide test session, and then instructors retained test materials for the rest of the module to administer to any absentees in individual sessions. Therefore absence of a test record indicates a prolonged absence. Only students registering within the first module were considered in the logistic regression because they were the only population segment that had the opportunity to achieve full retention.

All ESL levels took reading tests, the first three levels also took a listening test. In addition to a limited distribution for listening tests, they were administered within a reduced time period because audio prompting precluded concurrent instruction and make-up testing. Therefore this study considers only the reading tests.

The sample was drawn from a total population of 918 students who were of varied ethnicities and entry dates. Of those, there were 594 who had absolutely no data corruption of any kind. Data corruptions that resulted in case removal were absence of data due to corrupted identification numbers and also semantically invalid data for a given field. For that sample and selected views of it, factor level frequencies were tabulated. All studied cases sat for at least one test. Those cases having sat for 0 tests were omitted because all such cases occurred within a wide set of errors. No precise reporting of the number and kind of data errors was attempted.

Birthdates were collapsed into age brackets following the NHES. Level of prior schooling was transformed into grade brackets based on the public school district that the institution resides within: 0, 1-6, 7-8, 9-12, 13-16, 17-19 (19 being the highest reported grade).

Different views of the Asian population entering in module 1 were analyzed using multinomial logistic regression in SPSS. Asian students were selected for logistic regression because of the above stated research questions and because they constituted nearly 95% of the whole population; limiting the study to Asian students allowed ethnicity to be both focused upon and factored out. Some categories were further collapsed to enable a valid logistic regression analysis; these manipulations are described in the results sections.

## RESULTS

Table 1 (tables are at the end of the paper) provides frequencies for each factor level for each of three population views: all complete student records ($n$ = 594), all Asian students ($n$ = 560), and all Asian students who enrolled in the first module ($n$ = 468). As described, the dependent variable was the post-test count, therefore Table 1 provides level frequencies for each post-test level as well as for the whole population.

The population first analyzed by logistic regression was drawn from all Asian students who enrolled during module 1. However, there was no significant model fit, primarily because 65% of potential outcome cells had zero cases in the data. Therefore the class type, age, highest diploma, and labor status independent variables were collapsed, and cases with English as a native language were omitted. Additionally, the highest grade level factor is omitted from Table 2 and from all logistic regression models. That omission was made because it and highest diploma are not independent from each other. Additionally in some models diploma was significant, while substitution of grade level never produced significance. Table 2 describes factor level frequencies for all Asian students enrolled in module 1, after data collapsing, plus sub-populations divided by class time.

Table 3 summarizes goodness-of-fit tests for logistic regression outcomes on the following models: all Asian students enrolled in module 1 (A), A after factor level collapsing (C), one model from C for each time slot of morning (CM), afternoon (CA), and evening (CE), and an analysis of CE with a consideration of interaction effects (CEI). The A, C, and CE models were all significant at $p < 0.025$. The number of empty cells in each analysis is also reported in Table 3. The value does not vary except for CEI, because that model consisted only of the significant predictors from CE, thus drastically limiting the number of possible cases.

Tables 4-7 provide factor likelihood ratios for each variable in the significant models, with the significance level for the $X^2$ of each variable, based on a zero factor model (as reported by SPSS). Comparisons of Tables 4 and 5 indicate the benefit of collapsing, in that the overall significance of the model increased with collapsing, although particular predictors did shift. The CA model, with significance only at $p < 0.1$, contained no

significant predictors, further illustrating the poor capacity of that model. Although the CE model was suitably significant at $p < 0.025$, its predictors were similar to, and did not perform better than, C's.

Tables 8 and 9 describe the predictive effectiveness of each significance model as a ratio of correctly identified cases. Overall performance ranged from .532 to .660. The most predictive model was the CA model, however, recall that Table 6 indicates that the model contains no clear predictors. Overall performance of each model was low, however, for each, performance in the prediction of cases with only 1 test was higher, ranging from .686 to .821 accuracy.

## DISCUSSION

The policy to administer tests over several days was a response to fluctuating student attendance rates. However that administrative decision created a situation in which a missed test became evidence of prolonged absence, as opposed to a temporary absence such as an isolated sick day. It is on this basis that the number of tests is interpreted as a proxy for direct attendance data. Matching that information to background data, a search was made for particular factor levels that clustered around particular outcomes. However because logistic regression treats the analyzed outcome variable as discrete, this study provides no indication, positive of negative, of the interaction between those background factors and the causes of poor retention. Therefore the results do not suggest why less than perfect attendance occurs, but provide information on who to ask first when answering that question.

Compared to the national values given in the literature review, Table 1 depicts the population as younger (51.17% under 45, vs. 31.8%) and better educated (39.06% high school graduates vs. 14.3%, and 34.01% postsecondary degrees vs. 23%), but more often unemployed (46.8% vs. 18%). The evening population is even younger (57.94% under 45), but less educated (38.1% with no degree of any kind) and more often employed (60.32%). Regarding class type, Honolulu students tend to be in an ESL 1 course, although after data collapsing ESL 4-6 form the primary group. Despite that effect from collapsing, near majorities of the afternoon and evening populations attended bilingual

ESL 1 courses. The most common native language is Chinese (33.16%), except for the afternoon population who primarily speaks Korean (62.14%). Low afternoon attendance by Chinese speakers is possibly attributable to there not being a Chinese bilingual ESL 1 course at that time.

Table 2 provides values for the Asian population that may be compared to the national adult ESL population, in answer to the first research question. For the Asian segment of the studied population, we find that most are enrolled in an ESL-1 level class (48.03%), with the larger portion of that group being enrolled in a bilingual class (27.15%). 47.10% of the Asian population is under age 45, making the population younger than the national population, but not as young as the entire institution's student body. The Asian segment of the population is better educated, with 43.39% holding a high school degree and 31.09% holding a postsecondary degree, which are higher than both the institutional and national proportions. The population is unemployed (44.08%) less often than the institution-wide population, but still much more than the national population.

Unfortunately, the logistic regression models did not provide clear results, leaving the second research question without a clear answer. However the regression results remain useful indicators of populations deserving qualitative study and possible intervention. Additionally, the model fits increased for the subpopulations having only one test; this group is also most important to administration because it represents early dropouts. In practice the institution already attempts telephone exit interviews with students who have ceased attending, but resources are of course finite. Therefore the regression results may increase the efficiency of existing review mechanisms. Table 5 informs us that the factors of class type and diploma are the most informative. Using Table 2, likely early withdrawals are in the higher ESL levels of 4-6 and have a high school diploma.

The institution's administrative policies rationally seek to minimize cases of students sitting for only 1 test, because such cases interfere with NCLB reporting requirements. Regarding the predictors of class type and diploma identified by the logistic regression models (Table 5), the cross-tabulation given by Table 2 is informative. For both the total and evening populations, the earliest withdrawn students tend to be in the higher ESL levels 4-6 and have a high school diploma. To that extent, it seems that low retention is

not caused by frustration borne of the largest language barrier coupled with poor schooling, a common stereotype. Instead, given the intersection of denoted English proficiency and workforce skill these factors could connote, it appears that this population may be ripe for more workplace-targeted programs.

The study also revealed that the CASAS background form's native language question malfunctions; the near majority response was "other" (28.11%). In practice "other" has included a variety of Asian languages including Ilokan, Indonesian, Japanese, and Thai. Although the item provides a blank for naming the "other" language, capturing and coding of that data is done manually, thereby rendering it more costly and prone to error. A possible solution is to transform the question from list selection to coding based on an established list of languages, unifying language codes and decentralizing the burden of initial data verification into the classroom (instructors are already responsible for initially proofreading the background data on student forms).

## CONCLUSION

This study attempted to fill gaps in the adult ESL literature by providing a profile of an Asian population where before there had been mostly survey attrition statistics. Additionally a logistic regression analysis was conducted in an attempt to identify students who might be most likely to leave an adult ESL program early. In addition to the two research questions, this study helped resolve practical administrative concerns. Having completed this study, three additional questions present themselves.

One perpetual administrative concern is the continued improvement of test administration practices. Therefore, a useful first follow-up study would be to compare data from subsequent semesters and quantify any trends in factor levels and data quality. Factor level trends, changes in the student body, are interesting in themselves, while changes in data quality may demonstrate the impact of in-service training.

Although this study has provided useful results, extrapolation to national populations cannot be directly made. In part, because the population is under-represented, it neglects adult students in tuition-bearing programs within the same geographic neighborhood. However the differences between the population and the national ESL population are

likely to be increased by considering those programs. Such programs are primarily offered as college programs, which are unlikely to increase the aggregate age, or decrease the educational level, of the population. Still, a deeper problem exists, which is whether the studied sample is representative. The sample was collected by omitting records with invalid data, however it may be that certain subsections of the population are prone to data errors, perhaps caused by linguistic or cultural barriers. If so, then this study would have very little ability to directly illuminate other contexts.

Finally, the study presents a qualitative opportunity as well. Specifically, case studies need to be considered for the task of identifying and intervening in student withdrawal. Currently the institution can only react to withdrawal; this study was a step in the institution's attempt at becoming more proactive.

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Table 1

*Level Frequencies: Three Views*

| | | Complete Records (*n*=594) | | | | | Asian Students (*n*=560) | | | | | Module 1, Asian (*n*=468) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Test Count | | | | | Test Count | | | | | Test Count | | | | |
| Factor | Level | 1 | 2 | 3 | Total | % | 1 | 2 | 3 | Total | % | 1 | 2 | 3 | Total | % |
| Class Type | ESL-1 | **54** | 38 | 44 | 136 | **0.2290** | **53** | 35 | 42 | 130 | **0.2321** | 27 | 29 | **40** | 96 | **0.2051** |
| | ESL-1 Chinese | 22 | 21 | 18 | 61 | 0.1027 | 22 | 21 | 18 | 61 | 0.1089 | 19 | 20 | 18 | 57 | 0.1218 |
| | ESL-1 Korean | 16 | 21 | 15 | 52 | 0.0875 | 16 | 21 | 15 | 52 | 0.0929 | 15 | 18 | 15 | 48 | 0.1026 |
| | ESL-1 Vietnamese | 7 | 7 | 3 | 17 | 0.0286 | 7 | 7 | 3 | 17 | 0.0304 | 7 | 7 | 3 | 17 | 0.0363 |
| | ESL-1 Pre-literacy | 8 | 1 | 1 | 10 | 0.0168 | 6 | 1 | 1 | 8 | 0.0143 | 3 | 1 | 1 | 5 | 0.0107 |
| | ESL-2 | 47 | 19 | 11 | 77 | 0.1296 | 44 | 18 | 11 | 73 | 0.1304 | 32 | 16 | 10 | 58 | 0.1239 |
| | ESL-3 | 34 | 18 | 11 | 63 | 0.1061 | 31 | 16 | 7 | 54 | 0.0964 | 24 | 16 | 6 | 46 | 0.0983 |
| | ESL-4 | 39 | 23 | 13 | 75 | 0.1263 | 36 | 22 | 13 | 71 | 0.1268 | 31 | 15 | 12 | 58 | 0.1239 |
| | ESL-5 | 17 | 10 | 18 | 45 | 0.0758 | 13 | 10 | 17 | 40 | 0.0714 | 9 | 8 | 17 | 34 | 0.0726 |
| | ESL-6 | 32 | 15 | 11 | 58 | 0.0976 | 31 | 14 | 9 | 54 | 0.0964 | 27 | 13 | 9 | 49 | 0.1047 |
| | Total | 276 | 173 | 145 | | | 259 | 165 | 136 | | | 194 | 143 | 131 | | |
| Class Time | Morning | **137** | 80 | 63 | 280 | **0.4714** | **125** | 78 | 60 | 263 | **0.4696** | **91** | 65 | 58 | 214 | **0.4573** |
| | Afternoon | 64 | 46 | 42 | 152 | 0.2559 | 64 | 43 | 40 | 147 | 0.2625 | 47 | 37 | 38 | 122 | 0.2607 |
| | Evening | 75 | 47 | 40 | 162 | 0.2727 | 70 | 44 | 36 | 150 | 0.2679 | 56 | 41 | 35 | 132 | 0.2821 |
| | Total | 276 | 173 | 145 | | | 259 | 165 | 136 | | | 194 | 143 | 131 | | |
| Entry Module[a] | 1 | **206** | 151 | 138 | 495 | **0.8333** | **194** | 143 | 131 | 468 | **0.8357** | NA | NA | NA | NA | NA |
| | 2 | 21 | 10 | 5 | 36 | 0.0606 | 18 | 10 | 3 | 31 | 0.0554 | NA | NA | NA | NA | NA |
| | 3 | 22 | 7 | 1 | 30 | 0.0505 | 21 | 7 | 1 | 29 | 0.0518 | NA | NA | NA | NA | NA |
| | 4 | 12 | 4 | 0 | 16 | 0.0269 | 12 | 4 | 0 | 16 | 0.0286 | NA | NA | NA | NA | NA |
| | 5 | 14 | 1 | 1 | 16 | 0.0269 | 13 | 1 | 1 | 15 | 0.0268 | NA | NA | NA | NA | NA |
| | 6 | 1 | 0 | 0 | 1 | 0.0017 | 1 | 0 | 0 | 1 | 0.0018 | NA | NA | NA | NA | NA |
| | Total | 276 | 173 | 145 | | | 259 | 165 | 136 | | | NA | NA | NA | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gender | Female | **203** | 126 | 108 | 437 | **0.7357** | **190** | 121 | 105 | 416 | **0.7429** | **148** | 103 | 101 | 352 | **0.7521** |
| | Male | 73 | 47 | 37 | 157 | 0.2643 | 69 | 44 | 31 | 144 | 0.2571 | 46 | 40 | 30 | 116 | 0.2479 |
| | Total | 276 | 173 | 145 | | | 259 | 165 | 136 | | | 194 | 143 | 131 | | |
| Age[b] | 16-24 | 26 | 9 | 7 | 42 | 0.0707 | 22 | 7 | 6 | 35 | 0.0625 | 10 | 5 | 6 | 21 | 0.0449 |
| | 25-34 | 64 | 38 | 23 | 125 | 0.2104 | 61 | 37 | 19 | 117 | 0.2089 | 43 | 32 | 17 | 92 | 0.1966 |
| | 35-44 | **74** | 32 | 31 | 137 | **0.2306** | **68** | 30 | 29 | 127 | **0.2268** | **55** | 26 | 28 | 109 | **0.2329** |
| | 45-54 | 33 | 36 | 30 | 99 | 0.1667 | 33 | 35 | 29 | 97 | 0.1732 | 25 | 32 | 28 | 85 | 0.1816 |
| | 55-64 | 34 | 33 | 21 | 88 | 0.1481 | 32 | 33 | 21 | 86 | 0.1536 | 25 | 28 | 20 | 73 | 0.1560 |
| | 65+ | 45 | 25 | 33 | 103 | 0.1734 | 43 | 23 | 32 | 98 | 0.1750 | 36 | 20 | 32 | 88 | 0.1880 |
| | Total | 276 | 173 | 145 | | | 259 | 165 | 136 | | | 194 | 143 | 131 | | |
| Native Language | Chinese | **88** | 58 | 51 | 197 | **0.3316** | **87** | 58 | 51 | 196 | **0.3500** | **64** | 53 | 49 | 166 | **0.3547** |
| | English | 3 | 4 | 1 | 8 | 0.0135 | 3 | 3 | 0 | 6 | 0.0107 | 2 | 3 | 0 | 5 | 0.0107 |
| | Farsi | 0 | 0 | 1 | 1 | 0.0017 | 0 | 0 | 0 | 0 | 0.0000 | 0 | 0 | 0 | 0 | 0.0000 |
| | Korean | 68 | 43 | 48 | 159 | 0.2677 | 68 | 43 | 48 | 159 | 0.2839 | 48 | 35 | 46 | 129 | 0.2756 |
| | Russian | 2 | 1 | 0 | 3 | 0.0051 | 0 | 0 | 0 | 0 | 0.0000 | 0 | 0 | 0 | 0 | 0.0000 |
| | Spanish | 5 | 2 | 5 | 12 | 0.0202 | 0 | 0 | 0 | 0 | 0.0000 | 0 | 0 | 0 | 0 | 0.0000 |
| | Tagalog | 2 | 0 | 0 | 2 | 0.0034 | 0 | 0 | 0 | 0 | 0.0000 | 0 | 0 | 0 | 0 | 0.0000 |
| | Vietnamese | 22 | 13 | 10 | 45 | 0.0758 | 22 | 13 | 10 | 45 | 0.0804 | 20 | 13 | 10 | 43 | 0.0919 |
| | Other | 86 | 52 | 29 | 167 | 0.2811 | 79 | 48 | 27 | 154 | 0.2750 | 60 | 39 | 26 | 125 | 0.2671 |
| | Total | 276 | 173 | 145 | | | 259 | 165 | 136 | | | 194 | 143 | 131 | | |

| | | Complete Records (*n*=594) | | | | | Asian Students (*n*=560) | | | | | Module 1, Asian (*n*=468) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Test Count | | | | | Test Count | | | | | Test Count | | | | |
| Factor | Level | 1 | 2 | 3 | Total | % | 1 | 2 | 3 | Total | % | 1 | 2 | 3 | Total | % |
| Highest Grade Level[c] | 0 | 4 | 6 | 2 | 12 | 0.0202 | 4 | 6 | 2 | 12 | 0.0214 | 4 | 6 | 2 | 12 | 0.0256 |
| | 1 - 6 | 18 | 10 | 17 | 45 | 0.0758 | 18 | 9 | 14 | 41 | 0.0732 | 14 | 9 | 13 | 36 | 0.0769 |
| | 7 -8 | 6 | 8 | 14 | 28 | 0.0471 | 5 | 8 | 14 | 27 | 0.0482 | 5 | 8 | 14 | 27 | 0.0577 |
| | 9 - 12 | **157** | 101 | 71 | 329 | **0.5539** | **149** | 95 | 67 | 311 | **0.5554** | **110** | 83 | 65 | 258 | **0.5513** |
| | 13 - 16 | 76 | 42 | 38 | 156 | 0.2626 | 71 | 42 | 36 | 149 | 0.2661 | 52 | 33 | 34 | 119 | 0.2543 |
| | 17 - 19 | 15 | 6 | 3 | 24 | 0.0404 | 12 | 5 | 3 | 20 | 0.0357 | 9 | 4 | 3 | 16 | 0.0342 |
| | Total | 276 | 173 | 145 | | | 259 | 165 | 136 | | | 194 | 143 | 131 | | |
| Highest Diploma | None | 44 | 37 | 51 | 132 | 0.2222 | 43 | 37 | 46 | 126 | 0.2250 | 32 | 35 | 45 | 112 | 0.2393 |
| | GED | 3 | 0 | 3 | 6 | 0.0101 | 3 | 0 | 3 | 6 | 0.0107 | 3 | 0 | 3 | 6 | 0.0128 |
| | High School | **120** | 69 | 43 | 232 | **0.3906** | **113** | 65 | 41 | 219 | **0.3911** | **86** | 58 | 39 | 183 | **0.3910** |
| | Technical Certificate | 8 | 10 | 4 | 22 | 0.0370 | 5 | 10 | 4 | 19 | 0.0339 | 4 | 9 | 4 | 17 | 0.0363 |
| | AA/AS | 20 | 18 | 7 | 45 | 0.0758 | 19 | 18 | 7 | 44 | 0.0786 | 16 | 13 | 7 | 36 | 0.0769 |
| | 4yr College | 54 | 27 | 25 | 106 | 0.1785 | 50 | 27 | 24 | 101 | 0.1804 | 38 | 22 | 22 | 82 | 0.1752 |
| | Graduate Studies | 10 | 4 | 3 | 17 | 0.0286 | 9 | 1 | 2 | 12 | 0.0214 | 6 | 1 | 2 | 9 | 0.0192 |
| | Other | 17 | 8 | 9 | 34 | 0.0572 | 17 | 7 | 9 | 33 | 0.0589 | 9 | 5 | 9 | 23 | 0.0491 |
| | Total | 276 | 173 | 145 | | | 259 | 165 | 136 | | | 194 | 143 | 131 | | |
| Ed. Outside U.S.?[d] | Yes | **200** | 111 | 96 | 407 | **0.6852** | **186** | 104 | 94 | 384 | **0.6857** | **146** | 88 | 90 | 324 | **0.6923** |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Labor Status | Employed | 70 | 38 | 41 | 149 | 0.2508 | 65 | 36 | 37 | 138 | 0.2464 | 56 | 36 | 37 | 129 | 0.2756 |
| | Unemployed | **127** | 92 | 59 | 278 | **0.4680** | **117** | 87 | 55 | 259 | **0.4625** | **79** | 73 | 52 | 204 | **0.4359** |
| | Not seeking work | 52 | 27 | 19 | 98 | 0.1650 | 52 | 26 | 18 | 96 | 0.1714 | 35 | 19 | 17 | 71 | 0.1517 |
| | Retired | 27 | 16 | 26 | 69 | 0.1162 | 25 | 16 | 26 | 67 | 0.1196 | 24 | 15 | 25 | 64 | 0.1368 |
| | Total | 276 | 173 | 145 | | | 259 | 165 | 136 | | | 194 | 143 | 131 | | |
| Ethnicity[e] | Asian | **259** | 165 | 136 | 560 | **0.9428** | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Black | 2 | 0 | 1 | 3 | 0.0051 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Filipino | 2 | 0 | 0 | 2 | 0.0034 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Hispanic | 11 | 3 | 5 | 19 | 0.0320 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Native Hawaiian or other Pacific Islander | 3 | 4 | 1 | 8 | 0.0135 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | White | 13 | 5 | 7 | 25 | 0.0421 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Total[f] | NA | NA | NA | | | NA | NA | NA | | NA | NA | NA | NA | | |

Note. Each vertical slice represents a subset of that slice to the left. Highlighting indicates most frequent level.

[a]Each module = 10 class days for morning and afternoon, 8 for evening.

[b]Matches NHES Brackets.

[c]Grade level brackets based on school structures in institution's district.

[d]"No" determined by subtracting row total from *n*.

[e]Labels as used on CASAS form.

[f]Totals are irrelevant, multiple categories could be selected per subject.

Table 2

*Level Frequencies: Four Views, Further Collapsing*

| | | Module 1, Asian Collapsed (*n*=431) | | | | | Morning (*n*=202) | | | | | Afternoon (*n*=103) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Count | | | | | Count | | | | | Count | | | | | Count | | | | |
| Factor | Level | 1 | 2 | 3 | Total | % | 1 | 2 | 3 | Total | % | 1 | 2 | 3 | Total | % | 1 | 2 | 3 | Total | % |
| Class Type[a] | ESL-1 | 26 | 27 | 37 | 90 | 0.2088 | 19 | 20 | 24 | 63 | 0.3119 | 5 | 5 | 9 | 19 | 0.1845 | 2 | 2 | 4 | 8 | 0.0635 |
| | ESL-1 Bilingual | 39 | 43 | 35 | 117 | 0.2715 | 6 | 4 | 5 | 15 | 0.0743 | **14** | 13 | 13 | 40 | **0.3883** | 19 | **26** | 17 | 62 | **0.4921** |
| | ESL 2-3 | 54 | 31 | 15 | 100 | 0.2320 | 25 | 19 | 6 | 50 | 0.2475 | 8 | 7 | 2 | 17 | 0.1650 | 21 | 5 | 7 | 33 | 0.2619 |
| | ESL 4-6 | **58** | 33 | 33 | 124 | **0.2877** | **34** | 20 | 20 | 74 | **0.3663** | 12 | 7 | 8 | 27 | 0.2621 | 12 | 6 | 5 | 23 | 0.1825 |
| | Total | 177 | 134 | 120 | | | 84 | 63 | 55 | | | 39 | 32 | 32 | | | 54 | 39 | 33 | | |
| Gender | Female | **137** | 95 | 93 | 325 | **0.7541** | **70** | 46 | 45 | 161 | **0.7970** | **35** | 28 | 29 | 92 | **0.8932** | **32** | 21 | 19 | 72 | **0.5714** |
| | Male | 40 | 39 | 27 | 106 | 0.2459 | 14 | 17 | 10 | 41 | 0.2030 | 4 | 4 | 3 | 11 | 0.1068 | 22 | 18 | 14 | 54 | 0.4286 |
| | Total | 177 | 134 | 120 | | | 84 | 63 | 55 | | | 39 | 32 | 32 | | | 54 | 39 | 33 | | |
| Age | 16-34[b] | **49** | 35 | 20 | 104 | **0.2413** | 19 | 18 | 10 | 47 | 0.2327 | 8 | 3 | 2 | 13 | 0.1262 | **22** | 14 | 8 | 44 | **0.3492** |
| | 35-44 | 50 | 23 | 26 | 99 | 0.2297 | **24** | 11 | 13 | 48 | **0.2376** | 10 | 5 | 7 | 22 | 0.2136 | 16 | 7 | 6 | 29 | 0.2302 |
| | 45-54 | 22 | 31 | 27 | 80 | 0.1856 | 12 | 10 | 9 | 31 | 0.1535 | 4 | 13 | 7 | 24 | 0.2330 | 6 | 8 | 11 | 25 | 0.1984 |
| | 55-64 | 24 | 26 | 18 | 68 | 0.1578 | 11 | 13 | 9 | 33 | 0.1634 | 7 | 4 | 4 | 15 | 0.1456 | 6 | 9 | 5 | 20 | 0.1587 |
| | 65+ | 32 | | 29 | 80 | 0.1856 | 18 | 11 | 14 | 43 | 0.2129 | 10 | 7 | **12** | 29 | **0.2816** | 4 | 1 | 3 | 8 | 0.0635 |
| | Total | 177 | 134 | 120 | | | 84 | 63 | 55 | | | 39 | 32 | 32 | | | 54 | 39 | 33 | | |
| Native Language | Chinese | **63** | 50 | 48 | 161 | **0.3735** | **36** | 29 | 28 | 93 | **0.4604** | 3 | 1 | 2 | 6 | 0.0583 | **24** | 20 | 18 | 62 | **0.4921** |
| | Korean | 39 | 34 | 40 | 113 | 0.2622 | 17 | 12 | 12 | 41 | 0.2030 | 21 | 18 | **25** | 64 | **0.6214** | 1 | 4 | 3 | 8 | 0.0635 |
| | Vietnamese | 19 | 13 | 9 | 41 | 0.0951 | 2 | 3 | 1 | 6 | 0.0297 | 1 | 1 | | 2 | 0.0194 | 16 | 9 | 8 | 33 | 0.2619 |
| | Other | 56 | 37 | 23 | 116 | 0.2691 | 29 | 19 | 14 | 62 | 0.3069 | 14 | 12 | 5 | 31 | 0.3010 | 13 | 6 | 4 | 23 | 0.1825 |
| | Total | 177 | 134 | 120 | | | 84 | 63 | 55 | | | 39 | 32 | 32 | | | 54 | 39 | 33 | | |
| Highest Diploma[c] | None | 32 | 33 | 45 | 110 | 0.2552 | 12 | 14 | 18 | 44 | 0.2178 | 2 | 5 | 11 | 18 | 0.1748 | **18** | 14 | 16 | 48 | **0.3810** |
| | All High School | **88** | 57 | 42 | 187 | **0.4339** | **38** | 25 | 18 | 81 | **0.4010** | **26** | 19 | 14 | 59 | **0.5728** | 24 | 13 | 10 | 47 | 0.3730 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tech. Cert., A.A., A.S. | 20 | 22 | 11 | 53 | 0.1230 | 13 | 11 | 6 | 30 | 0.1485 | 3 | 3 | 3 | 9 | 0.0874 | 4 | 8 | 2 | 14 | 0.1111 |
| | 4yr College | 37 | 22 | 22 | 81 | 0.1879 | 21 | 13 | 13 | 47 | 0.2327 | 8 | 5 | 4 | 17 | 0.1650 | 8 | 4 | 5 | 17 | 0.1349 |
| | Total | 177 | 134 | 120 | | | 84 | 63 | 55 | | | 39 | 32 | 32 | | | 54 | 39 | 33 | | |
| Ed. Outside U.S.? | Yes | **129** | 83 | 80 | 292 | **0.6775** | **63** | 42 | 37 | 142 | **0.7030** | **30** | 21 | 21 | 72 | **0.6990** | **36** | 20 | 22 | 78 | **0.6190** |
| Labor Status | Employed | 51 | 33 | 34 | 118 | 0.2738 | 14 | 8 | 7 | 29 | 0.1436 | 5 | 2 | 6 | 13 | 0.1262 | **32** | 23 | 21 | 76 | **0.6032** |
| | Unemployed | **72** | 68 | 50 | 190 | **0.4408** | **43** | 35 | 28 | 106 | **0.5248** | 15 | **19** | 12 | 46 | **0.4466** | 14 | 14 | 10 | 38 | 0.3016 |
| | Not working[d] | 54 | 33 | 36 | 123 | 0.2854 | 27 | 20 | 20 | 67 | 0.3317 | 19 | 11 | 14 | 44 | 0.4272 | 8 | 2 | 2 | 12 | 0.0952 |
| | Total | 177 | 134 | 120 | | | 84 | 63 | 55 | | | 39 | 32 | 32 | | | 54 | 39 | 33 | | |

Note. Factor and level notes from prior tables apply except where superceded by notes below.
Bold indicates most frequent level in group and by test.
[a]Categories collapsed from Table 1.
[b]Collapses first two brackets from Table 1.
[c]Collapses categories from Table 1.
[d]Collapses last two categories from Table 1.

Table 3
*Model Fits*

| Model | Empty % | Intcpt -2ll[a] | Final -2ll | Model Chi[2b] | *df* | Chi[2] *p* level |
|---|---|---|---|---|---|---|
| Primary | 0.638 | 953.938 | 843.534 | 110.405 | 64 | 0.005 |
| Collapsed | 0.638 | 860.616 | 789.438 | 71.178 | 38 | 0.005 |
| Morning | 0.623 | 395.730 | 366.450 | 29.280 | 34 | -- |
| Afternoon | 0.626 | 205.868 | 162.330 | 43.538 | 34 | 0.1 |
| Evening | 0.639 | 258.118 | 208.487 | 49.631 | 34 | 0.025 |
| Evening w/interactions | 0.083 | 58.200 | 37.668 | 20.531 | 14 | -- |

[a] "-2ll" = -2 Log Likelihood.
[b] "The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0." (SPSS)

Table 4
*Likelihood Ratio for Module 1, Asian*

| Effect | Model -2ll | Chi[2] | *df* | Chi[2] *p* level |
|---|---|---|---|---|
| Intercept | 843.534 | 0.000 | 0 | -- |
| Gender | 847.915 | 4.381 | 2 | -- |
| Age | 856.691 | 13.157 | 10 | -- |
| Class Type | 878.364 | 34.830 | 18 | 0.01 |
| Class Time | 845.833 | 2.300 | 4 | -- |
| Diploma | 869.090 | 25.556 | 14 | 0.05 |
| Native Language | 856.048 | 12.514 | 8 | -- |
| Labor Status | 845.483 | 1.950 | 6 | -- |
| Ed. outside U.S.? | 849.825 | 6.291 | 2 | 0.05 |

Note. Notes from prior table apply.

Table 5
*Likelihood Ratio for Collapsed*

| Effect | Model -2ll | $Chi^2$ | *df* | $Chi^2$ *p* level |
|---|---|---|---|---|
| Intercept | 789.438 | 0.000 | 0 | -- |
| Gender | 793.364 | 3.927 | 2 | -- |
| Age | 804.926 | 15.488 | 8 | 0.1 |
| Class Type | 804.103 | 14.666 | 6 | 0.025 |
| Class Time | 790.208 | 0.771 | 4 | -- |
| Diploma | 805.998 | 16.560 | 6 | 0.025 |
| Native Language | 794.781 | 5.343 | 6 | -- |
| Labor Status | 791.607 | 2.170 | 4 | -- |
| Ed. outside U.S.? | 794.627 | 5.190 | 2 | 0.1 |

Note. Notes from prior table apply.

Table 6
*Likelihood Ratio Tests for Afternoon*

| Effect | Model -2ll | $Chi^2$ | *df* | $Chi^2$ *p* level |
|---|---|---|---|---|
| Intercept | 162.330 | 0.000 | 0 | -- |
| Gender | 162.353 | 0.023 | 2 | -- |
| Age | 175.642 | 13.312 | 8 | -- |
| Class Type | 168.045 | 5.716 | 6 | -- |
| Diploma | 172.934 | 10.604 | 6 | -- |
| Native Language | 168.799 | 6.469 | 6 | -- |
| Labor Status | 167.313 | 4.984 | 4 | -- |
| Ed. outside U.S.? | 164.933 | 2.603 | 2 | -- |

Note. Notes from prior table apply.

Table 7
*Likelihood Ratio Tests for Evening*

| Effect | -2 Log Likelihood of Reduced Model | $Chi^2$ | *df* | $Chi^2$ *p* level |
|---|---|---|---|---|
| Intercept | 208.487 | 0.000 | 0 | -- |
| Gender | 209.000 | 0.513 | 2 | -- |
| Age | 220.735 | 12.248 | 8 | -- |
| Class Type | 220.417 | 11.930 | 6 | 0.100 |
| Diploma | 222.265 | 13.779 | 6 | 0.050 |
| Native Language | 212.790 | 4.303 | 6 | -- |
| Labor Status | 211.332 | 2.845 | 4 | -- |
| Ed. outside U.S.? | 217.397 | 8.910 | 2 | 0.025 |

Note. Notes from prior table apply.

Table 8
*Classification for Module 1, Asian*

| | Predicted | | | |
|---|---|---|---|---|
| Observed | 1 | 2 | 3 | % Correct |
| 1 | 133 | 33 | 28 | 68.60% |
| 2 | 62 | 53 | 28 | 37.10% |
| 3 | 39 | 29 | 63 | 48.10% |
| Overall % | 50.00% | 24.60% | 25.40% | 53.20% |

Note. This table is provided by SPSS as "Classification."

Table 9
*Classification for Collapsed*

| | Predicted | | | |
|---|---|---|---|---|
| Observed | 1 | 2 | 3 | % Correct |
| 1 | 125 | 31 | 21 | 70.60% |
| 2 | 59 | 49 | 26 | 36.60% |
| 3 | 45 | 28 | 47 | 39.20% |
| Overall % | 53.10% | 25.10% | 21.80% | 51.30% |

Note. Notes from prior table apply.

Table 10
*Classification for Afternoon*

| | | Predicted | | | |
|---|---|---|---|---|---|
| Observed | | 1 | 2 | 3 | % Correct |
| | 1 | 32 | 2 | 5 | 82.10% |
| | 2 | 12 | 14 | 6 | 43.80% |
| | 3 | 8 | 2 | 22 | 68.80% |
| Overall % | | 50.50% | 17.50% | 32.00% | 66.00% |

Note. Notes from prior table apply.

Table 11
*Classification for Evening*

| | | Predicted | | | |
|---|---|---|---|---|---|
| Observed | | 1 | 2 | 3 | % Correct |
| | 1 | 43 | 7 | 4 | 79.60% |
| | 2 | 12 | 24 | 3 | 61.50% |
| | 3 | 14 | 6 | 13 | 39.40% |
| Overall % | | 54.80% | 29.40% | 15.90% | 63.50% |

Note. Notes from prior table apply.