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| <b>14. ABSTRACT</b><br><br>This report provides evidence-based recommendations for assigning individuals to foreign languages for initial acquisition training (IAT) at the U.S. Army John F. Kennedy Special Warfare Center and School (USAJFKSWCS). This report attempts to determine the strongest predictor or combination of predictors of foreign language learning as measured by the Oral Proficiency Interview (OPI), which is used as the graduation standard at USAJFKSWCS. This study examined the following predictors: Army General Technical (GT) score on the Armed Services Vocational Aptitude Battery (ASVAB), Defense Language Aptitude Battery (DLAB), and the Wonderlic Personnel Test (WPT™). Specifically, this study determined if these predictors had any influence as to whether or not students would exceed the foreign language Oral Proficiency Interview (OPI) graduation standard (i.e., achieving 1/1+, 1+/1, or higher) at USAJFKSWCS. The study found that the DLAB was the strongest single predictor and also established cut scores for using the DLAB for language assignment. However, cut scores may not always be feasible to execute, so a top-down assignment protocol based on DLAB scores was ultimately recommended. |                         |                                    |                                                   |                                                                   |                                                                  |
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# Evaluating Predictors of Foreign Language Learning



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## EXECUTIVE SUMMARY

### Issue and Overview

The purpose of this report is to provide evidence-based recommendations to facilitate the assignment of personnel to foreign languages for initial acquisition training (IAT) at the U.S. Army John F. Kennedy Special Warfare Center and School (USAJFKSWCS). This inquiry is directed at determining the strongest predictor or combination of predictors of foreign language learning as assessed on the Oral Proficiency Interview (OPI), which is used as the graduation standard at USAJFKSWCS. It also recommends cut scores for various predictor options. Although cut scores can be used, a top-down assignment approach using the best predictor is often the simplest option to execute.

### Findings

*Which test (or combination of tests) is most predictive of exceeding the OPI standard?*

- A weighted composite of the Defense Language Aptitude Battery (DLAB) and the Wonderlic Personnel Test (WPT™) is the best overall predictor of *exceeding*<sup>1</sup> the graduation standard on the OPI ( $r = .18$ ).
- DLAB is the best single predictor of exceeding standard on the OPI ( $r = .17$ ), followed by the WPT™ ( $r = .14$ ) and the Army General Technical<sup>2</sup> (GT) score on the Armed Services Vocational Aptitude Battery (ASVAB;  $r = .13$ ).
- The DLAB-WPT™ composite does a comparable job of identifying those individuals who *exceeded* the standard as the DLAB, but the composite does a slightly better job identifying those who *did not exceed* the standard than the DLAB. This makes the composite a slightly more effective predictor.

### Conclusions and Recommendations

- In an absolute sense, none of the individual tests or test combinations are very good predictors of exceeding the OPI standard. These tests were more predictive of Defense Language Proficiency Test (DLPT)<sup>3</sup> ratings than of OPI ratings.
- Since the DLAB-WPT™ composite 1) only provides a slight increase in prediction over and above the DLAB, and 2) the feasibility of using two tests may not be practical:
  - **Recommendation:** Use the DLAB to set cut scores and make decisions for assigning the highest potential students to specific languages.
  - **Recommendation:** If DLAB scores are unavailable, use the WPT™ to make assignments. If WPT™ scores are also unavailable, use the GT score.

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<sup>1</sup> Due to the high rate of individuals meeting the graduation standard on the OPI (i.e., little variability in scores), exceeding standard was used as the criterion. Individuals with scores of 1/1+ or 1+/1 were included in the exceeded standard group.

<sup>2</sup> Given the substantial overlap between the GT and the Armed Forces Qualification Test (AFQT;  $r = .87$ ), only the GT was examined. Previous technical reports suggested the GT was better than the AFQT at differentiating low/high OPI performers at USAJFKSWCS.

<sup>3</sup> For details regarding predictors of the DLPT, please see SWA Consulting Inc. (2008, Nov.). *SOF language training analysis support project: Wonderlic Personnel Test as a predictor of language proficiency* (Technical Report #2008010608). Raleigh, NC: SWA Consulting Inc.

- **Recommendation:** Regardless of the composite or individual test used, executing a cut score strategy (i.e., only assigning personnel who exceed the minimum cut score to a language) may not be feasible. In cases when using cut scores are not feasible, we recommend a top-down assignment protocol (i.e., rank ordering trainees from highest to lowest on the predictor and assigning the trainees with the highest scores to the most difficult languages) because it optimizes the assignment process and is often the simplest method to execute.

If cut scores are utilized with single test scores (see Table 2, p. 6 for DLAB-WPT™ composite cut scores), the DLAB, WPT™, and GT scores in the table below are the recommended minimum scores for assigning trainees to various target languages.

| Language               | Cut Scores |      |     |
|------------------------|------------|------|-----|
|                        | DLAB       | WPT™ | GT  |
| <b>CAT I</b>           |            |      |     |
| French                 | 77         | 51   | 115 |
| Spanish                | 87         | 68   | 121 |
| <b>CAT II</b>          |            |      |     |
| Indonesian             | 83         | 59   | 119 |
| <b>CAT III</b>         |            |      |     |
| Dari                   | 104        | 87   | 126 |
| Pashtu-Afghan          | 104        | 82   | 126 |
| Persian-Farsi          | 101        | 66   | 121 |
| Russian                | 99         | 69   | 122 |
| Tagalog (Filipino)     | 67         | 15   | 104 |
| Thai                   | 90         | 52   | 115 |
| Urdu                   | 83         | 47   | 114 |
| <b>CAT IV</b>          |            |      |     |
| Chinese-Mandarin       | 116        | 87   | 131 |
| Korean                 | 98         | 52   | 116 |
| Modern Standard Arabic | 111        | 79   | 127 |

## REPORT DETAILS

This report was produced as part of the Special Operations Forces Language Office (SOFLO, USSOCOM) training analysis support initiative. The purpose of this report is to provide evidence-based recommendations to facilitate the assignment of personnel to foreign languages for initial acquisition training (IAT) at the U.S. Army John F. Kennedy Special Warfare Center and School (USAJFKSWCS).

This study evaluated the Army General Technical (GT) score on the Armed Services Vocational Aptitude Battery (ASVAB)<sup>4</sup>, Defense Language Aptitude Battery (DLAB), and the Wonderlic Personnel Test (WPT<sup>TM</sup>) to determine the strongest predictor or combination of predictors of foreign language learning. Specifically, we evaluated how effectively these tests predict whether or not students will *exceed* the foreign language Oral Proficiency Interview (OPI) graduation standard (i.e., achieving 1/1+, 1+/1, or higher<sup>5</sup>) at USAJFKSWCS. We evaluated the tests both individually and as optimally weighted combinations. This report also recommends cut scores based on these various predictor options.

### Sample

Participants in this study were selected for inclusion based on consistently available scores for each predictor and OPI ratings. The resulting sample included 1,813 students<sup>6</sup> from the USAJFKSWCS. The sample contained data from Soldiers who studied various languages, ranging from Category (CAT) I to CAT IV. Of the 1,813 students, 791 exceeded the OPI graduation standard and 1,022 did not exceed the standard. However, of the 1,022 who did not exceed the standard, 995 met the 1/1 OPI standard.

### Findings

When considered individually, DLAB scores have the strongest relationship with exceeding the OPI standard (Table 1, p. 5). However, a DLAB-WPT<sup>TM</sup> composite provided the strongest relationship when compared to all individual and combinations of predictors (e.g., WPT<sup>TM</sup> and GT, GT and DLAB). Table 1 (p. 5) illustrates that the DLAB-WPT<sup>TM</sup> composite does a comparable job of identifying those who exceeded 1/1 as the DLAB, and the composite does a slightly better job of identifying those who did not exceed 1/1 than the DLAB.

Overall, all tests were less predictive of OPI ratings than Defense Language Proficiency Test (DLPT) ratings.<sup>7</sup> Additionally, previous findings indicated an Armed Forces Qualification Test (AFQT) and WPT<sup>TM</sup> composite was the best predictor of the DLPT, whereas a DLAB-WPT<sup>TM</sup> composite was the best predictor of exceeding standard on the OPI (*Wonderlic Personnel Test as a Predictor of Language*

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<sup>4</sup> Given the substantial overlap between the GT and the Armed Force Qualification Test (AFQT;  $r = .87$ ), only the GT was examined. Previous technical reports suggested the GT was better than the AFQT at differentiating low/high OPI performers at USAJFKSWCS.

<sup>5</sup> Due to the high rate of individuals meeting standard, exceeding standard was used as the criterion. Individuals with scores of 1/1+ or 1+/1 were included in the exceeded standard group.

<sup>6</sup> To enhance confidence in these findings, optimal cut scores were estimated using a randomly selected subsample (60% of the full sample). The resulting cut scores were evaluated on the remaining 40% of the sample.

<sup>7</sup> For details regarding predictors of the DLPT, please see SWA Consulting Inc. (2008, Nov.). *SOF language training analysis support project: Wonderlic Personnel Test as a predictor of language proficiency* (Technical Report #2008010608). Raleigh, NC: SWA Consulting Inc.

*Proficiency*, Technical Report #2008010608). However, for both the DLPT and OPI, DLAB scores provided the strongest relationship with meeting or exceeding standard than other individual tests.

Table 1. Relationships between Predictors and Exceeding OPI Standard

| Predictor                                     | Correlation with Exceeding 1/1 <sup>a</sup> | Percentage of high scorers that exceeded 1/1 <sup>b</sup> | Percentage of low scorers that did not exceed 1/1 <sup>b</sup> |
|-----------------------------------------------|---------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------|
| <b>Best Predictor</b>                         |                                             |                                                           |                                                                |
| DLAB-WPT <sup>TM</sup> Composite <sup>8</sup> | .18                                         | 66%                                                       | 68%                                                            |
| <b>Other Predictors</b>                       |                                             |                                                           |                                                                |
| DLAB                                          | .17                                         | 67%                                                       | 61%                                                            |
| WPT <sup>TM</sup>                             | .14                                         | 58%                                                       | 56%                                                            |
| GT <sup>9</sup>                               | .13                                         | 57%                                                       | 61%                                                            |

Based on 1,813 students.

<sup>a</sup> All correlations are statistically significant ( $p < .001$ ).

<sup>b</sup> These comparisons are between students testing in the same target language.

Table 2 (p. 6) shows the recommended DLAB-WPT<sup>TM</sup> composite cut scores for assigning the highest potential students to specific languages (see Appendix A for an example on how to use Table 2). These cut scores were selected to balance a) the number of Soldiers selected, and b) the probability of success (i.e., exceeding standard) of those selected. Since the combination of DLAB and WPT<sup>TM</sup> was the best predictor of the OPI outcome, we present cut scores for this single composite score rather than for DLAB and WPT<sup>TM</sup> individually. Many different combinations of DLAB and WPT<sup>TM</sup> scores will produce the same composite score, thus setting specific cut scores for either test individually is not appropriate here.

Table 2 (p. 6) also shows how these cut scores performed in the 40% subsample<sup>10</sup> (i.e., what percentage of the selected students would have exceeded the OPI graduation standard if a cut score was applied). Using trainees' DLAB-WPT<sup>TM</sup> composite scores, the cut scores specified for each language should guide assignment of trainees to the appropriate language. For instance, of the 131 French students in the 40% subsample, 38 (29%) exceeded the OPI graduation standard. If a cut score of 50 was applied to select these students into French, only 60 of the 131 would have met the cut score; however, 26 of those 60 selected (43%) would have exceeded the OPI graduation standard. Thus, using the cut score would increase the rate at which trainees exceeded the OPI standard (i.e., increasing the efficiency of training).

In general, although fewer students would have been assigned to each language had the cut score been used, the trainees who would have been assigned to their actual training language would have exceeded the OPI standard at a higher rate. Persian-Farsi, Thai, and Korean were the only exceptions. The results show that using the cut score would have produced poorer testing outcomes for these languages, but this

<sup>8</sup> This composite can be calculated as  $[(\text{DLAB score} + \text{WPT}^{\text{TM}} \text{ score} \times .40) \div 2]$ .

<sup>9</sup> Given the substantial overlap between the GT and the Armed Force Qualification Test (AFQT;  $r = .87$ ), only the GT was examined. Previous technical reports suggested the GT was better than the AFQT at differentiating low/high OPI performers at USAJFKSWCS.

<sup>10</sup> To enhance confidence in these findings, optimal cut scores were estimated using a randomly selected subsample (60% of the full sample). The resulting cut scores were evaluated on the remaining 40% of the sample.

is not unexpected. Even using highly valid predictors, suboptimal decisions will be made in some cases. However, using validated cut scores will produce more optimal (or correct) decisions than suboptimal decisions over a large number of trainees for all languages.

Furthermore, although fewer high proficiency Soldiers were produced overall when the cut scores were applied, the overall process was more efficient because a higher percentage of the selected trainees exceeded the OPI standard.

Table 2. Recommended DLAB-WPT™ Composite Cut Scores by Language

| Language               | Cut Score | No Cut Used |          |          | If Cut Used |          |          |
|------------------------|-----------|-------------|----------|----------|-------------|----------|----------|
|                        |           | Selected    | Exceeded | Exceeded | Selected    | Exceeded | Exceeded |
| CAT I                  |           |             |          |          |             |          |          |
| French                 | 50        | 131         | 38       | 29%      | 60          | 26       | 43%      |
| Spanish                | 55        | 138         | 69       | 50%      | 44          | 32       | 73%      |
| CAT II                 |           |             |          |          |             |          |          |
| Indonesian             | 52        | 51          | 35       | 69%      | 27          | 21       | 78%      |
| CAT III                |           |             |          |          |             |          |          |
| Dari                   | 67        | 23          | 7        | 30%      | 4           | 2        | 50%      |
| Pashtu-Afghan          | 67        | 50          | 41       | 82%      | 16          | 14       | 88%      |
| Persian-Farsi          | 65        | 15          | 3        | 20%      | 5           | 0        | 0%       |
| Russian                | 64        | 112         | 28       | 25%      | 45          | 15       | 33%      |
| Tagalog (Filipino)     | 41        | 25          | 20       | 80%      | 22          | 18       | 82%      |
| Thai                   | 56        | 10          | 8        | 80%      | 7           | 5        | 71%      |
| Urdu                   | 54        | 22          | 4        | 18%      | 15          | 3        | 20%      |
| CAT IV                 |           |             |          |          |             |          |          |
| Chinese-Mandarin       | 74        | 39          | 25       | 64%      | 18          | 14       | 78%      |
| Korean                 | 62        | 22          | 3        | 14%      | 17          | 2        | 12%      |
| Modern Standard Arabic | 71        | 115         | 62       | 54%      | 52          | 30       | 58%      |

These results are based on the 40% subsample, 753 students.

Since the DLAB-WPT™ composite only provides only a slight increase in prediction of the OPI outcome over and above the DLAB alone and the feasibility of using two tests may not be practical, the remainder of this report provides recommended cut scores for each individual predictor. The individual predictor cut scores can also be used in place of any missing predictor. For instance, although the DLAB was the single best predictor, if a trainee's DLAB score is unavailable, using the WPT™ score would be the next best option, followed by the GT score.

Table 3 (p. 7) provides recommended cut scores for assigning trainees to each language when only the DLAB is used as the predictor (see Appendix A for a detailed example of how to use Table 3). Overall performance of the DLAB cut scores is comparable to that of the DLAB-WPT™ cut scores. Consistent with the composite cut scores, those who met the cut score for their training language exceeded the OPI

graduation standard at a higher rate than those who did not meet the cut score. Pashtu-Afghan, Persian-Farsi, and Korean were the only exceptions.

Table 3. Recommended DLAB Cut Scores by Language

| Language               | Cut Score | No Cut Used |          |          | If Cut Used |          |          |
|------------------------|-----------|-------------|----------|----------|-------------|----------|----------|
|                        |           | Selected    | Exceeded | Exceeded | Selected    | Exceeded | Exceeded |
| CAT I                  |           |             |          |          |             |          |          |
| French                 | 77        | 131         | 38       | 29%      | 58          | 24       | 41%      |
| Spanish                | 87        | 138         | 69       | 50%      | 41          | 29       | 71%      |
| CAT II                 |           |             |          |          |             |          |          |
| Indonesian             | 83        | 51          | 35       | 69%      | 26          | 20       | 77%      |
| CAT III                |           |             |          |          |             |          |          |
| Dari                   | 104       | 23          | 7        | 30%      | 7           | 4        | 57%      |
| Pashtu-Afghan          | 104       | 50          | 41       | 82%      | 17          | 13       | 77%      |
| Persian-Farsi          | 101       | 15          | 3        | 20%      | 5           | 0        | 0%       |
| Russian                | 99        | 112         | 28       | 25%      | 40          | 15       | 38%      |
| Tagalog (Filipino)     | 67        | 25          | 20       | 80%      | 21          | 17       | 81%      |
| Thai                   | 90        | 10          | 8        | 80%      | 7           | 6        | 86%      |
| Urdu                   | 83        | 22          | 4        | 18%      | 15          | 3        | 20%      |
| CAT IV                 |           |             |          |          |             |          |          |
| Chinese-Mandarin       | 116       | 39          | 25       | 64%      | 20          | 15       | 75%      |
| Korean                 | 98        | 22          | 3        | 14%      | 17          | 2        | 12%      |
| Modern Standard Arabic | 111       | 115         | 62       | 54%      | 39          | 23       | 59%      |

These results are based on the 40% subsample, 753 students.

In comparison, the recommended DLAB cut scores based on the data in this study are fairly consistent with the minimum recommended DLAB cut scores for each language category as set by the Department of Defense (DoD; R11-6 Army Linguist Management; Table 4, p. 7). However, both the recommended scores in this study and those suggested by the DoD are higher than those provided in the USSOCOM M350-8 (2009).

Table 4. DoD and USSOCOM Recommended DLAB Scores

| Language Category | DLAB Score from DoD | DLAB Score from USSOCOM |
|-------------------|---------------------|-------------------------|
| CAT I             | 85                  | 75                      |
| CAT II            | 90                  | 75                      |
| CAT III           | 95                  | 80                      |
| CAT IV            | 100                 | 85                      |

If DLAB scores are unavailable for trainees, WPT<sup>TM</sup> scores are the next best option for assigning personnel to a training language. Table 5 (p. 8) provides the recommended WPT<sup>TM</sup> cut scores for

assigning personnel into various languages (see Appendix A for a detailed example on how to use Table 4). Consistently, those who met the cut score for their assigned language tended to exceed the OPI graduation standard at a higher rate than those who did not meet the cut score. Persian-Farsi and Thai were the only exceptions.

Table 5. Recommended WPT™ Cut Scores by Language

| Language               | Cut Score | No Cut Used |          |          | If Cut Used |          |          |
|------------------------|-----------|-------------|----------|----------|-------------|----------|----------|
|                        |           | Selected    | Exceeded | Exceeded | Selected    | Exceeded | Exceeded |
| CAT I                  |           |             |          |          |             |          |          |
| French                 | 51        | 131         | 38       | 29%      | 69          | 25       | 36%      |
| Spanish                | 68        | 138         | 69       | 50%      | 41          | 28       | 68%      |
| CAT II                 |           |             |          |          |             |          |          |
| Indonesian             | 59        | 51          | 35       | 69%      | 23          | 17       | 74%      |
| CAT III                |           |             |          |          |             |          |          |
| Dari                   | 87        | 23          | 7        | 30%      | 6           | 4        | 67%      |
| Pashtu-Afghan          | 82        | 50          | 41       | 82%      | 15          | 13       | 87%      |
| Persian-Farsi          | 66        | 15          | 3        | 20%      | 9           | 1        | 11%      |
| Russian                | 69        | 112         | 28       | 25%      | 65          | 19       | 29%      |
| Tagalog (Filipino)     | 15        | 25          | 20       | 80%      | 25          | 20       | 80%      |
| Thai                   | 52        | 10          | 8        | 80%      | 6           | 4        | 67%      |
| Urdu                   | 47        | 22          | 4        | 18%      | 15          | 3        | 20%      |
| CAT IV                 |           |             |          |          |             |          |          |
| Chinese-Mandarin       | 87        | 39          | 25       | 64%      | 11          | 9        | 82%      |
| Korean                 | 52        | 22          | 3        | 14%      | 17          | 3        | 18%      |
| Modern Standard Arabic | 79        | 115         | 62       | 54%      | 59          | 34       | 58%      |

These results are based on the 40% subsample, 753 students.

If DLAB and WPT™ scores are unavailable for trainees, GT scores are the next best option for assigning personnel to a training language. Table 6 (p. 9) provides the recommended GT cut scores for assigning personnel into various languages (see Appendix A for a detailed example on how to use Table 5). As shown with other predictors, those who met the cut score for their assigned language exceeded the OPI graduation standard at a higher rate than those who did not meet the cut score. However, there were more exceptions to exceeding at a higher rate than when the other cut scores were applied (e.g., using DLAB cut scores). Persian-Farsi, Tagalog, Urdu, Chinese-Mandarin, and Korean were all exceptions to this increase when GT cut scores were applied for language assignment.

Table 6. Recommended GT Cut Scores by Language

| Language               | Cut Score | No Cut Used |          |          | If Cut Used |          |          |
|------------------------|-----------|-------------|----------|----------|-------------|----------|----------|
|                        |           | Selected    | Exceeded | Exceeded | Selected    | Exceeded | Exceeded |
| CAT I                  |           |             |          |          |             |          |          |
| French                 | 115       | 131         | 38       | 29%      | 64          | 21       | 33%      |
| Spanish                | 121       | 138         | 69       | 50%      | 38          | 25       | 66%      |
| CAT II                 |           |             |          |          |             |          |          |
| Indonesian             | 119       | 51          | 35       | 69%      | 21          | 15       | 71%      |
| CAT III                |           |             |          |          |             |          |          |
| Dari                   | 126       | 23          | 7        | 30%      | 8           | 4        | 50%      |
| Pashtu-Afghan          | 126       | 50          | 41       | 82%      | 15          | 13       | 87%      |
| Persian-Farsi          | 121       | 15          | 3        | 20%      | 9           | 1        | 11%      |
| Russian                | 122       | 112         | 28       | 25%      | 46          | 16       | 35%      |
| Tagalog (Filipino)     | 104       | 25          | 20       | 80%      | 24          | 19       | 79%      |
| Thai                   | 115       | 10          | 8        | 80%      | 6           | 5        | 83%      |
| Urdu                   | 114       | 22          | 4        | 18%      | 17          | 2        | 12%      |
| CAT IV                 |           |             |          |          |             |          |          |
| Chinese-Mandarin       | 131       | 39          | 25       | 64%      | 14          | 7        | 50%      |
| Korean                 | 116       | 22          | 3        | 14%      | 16          | 2        | 13%      |
| Modern Standard Arabic | 127       | 115         | 62       | 54%      | 42          | 24       | 57%      |

These results are based on the 40% subsample, 753 students.

## Conclusions and Recommendations

In an absolute sense, none of the individual predictors or composites were very good predictors of exceeding the OPI graduation standard (i.e., there were small, though significant relationships between the predictors and exceeding the OPI standard). DLAB had the single strongest observed relationship with exceeding standard, but the weighted DLAB-WPT™ composite improves slightly upon the DLAB on its own. However, since there is only a slight increase in prediction and the feasibility of using the combination of two selection tests may not be practical, we recommend using the DLAB cut scores to assign trainees to specific languages.

If DLAB scores are unavailable for incoming language students, WPT™ cut scores would be the next best option to make language assignment decisions. Furthermore, if DLAB and WPT™ scores are unavailable, use the GT score. Regardless of the composite or individual test used, executing a cut score strategy (i.e., only assigning personnel who exceed the minimum cut score to a language) may not be feasible, especially if the cut scores are different for each language. In cases when using cut scores are not feasible, we recommend a top-down assignment protocol (i.e., rank ordering trainees from highest to lowest on the predictor and assigning the trainees with the highest scores to the most difficult languages) because it optimizes the assignment process and is straightforward to execute.

Using cut scores to guide language assignment is about achieving greater efficiency in the training process. Language assignment using valid predictors such as those identified in this report helps achieve efficiency by identifying high potential learners early in the process (i.e., predicting those who will exceed the OPI graduation standard for a given language). Evidence suggests that using the recommended DLAB cut scores to guide language assignment will improve efficiency, in that a higher percentage of students will exceed the OPI standard and fewer will ‘fail’ (i.e., not exceed the standard). Furthermore, these cut scores are fairly consistent with the DoD minimum DLAB requirements across language categories.

Balancing the current findings with the ease of execution, the most straightforward recommendation is to use a single test score (DLAB or WPT<sup>TM</sup> would be best choices) and a top-down assignment protocol within each military occupational specialty (MOS). That is, ranking trainees based on their test score from highest to lowest within each MOS and assigning the highest scoring trainees in each MOS to languages in order of difficulty (i.e., start filling most difficult languages with trainees with the highest scores in each MOS group until MOS requirements are filled for each language, then move to the next language). This is the simplest way to optimize the assignment of your personnel to training and optimize the resulting capability, especially when you are using the scores for assignment (not selection).

### ABOUT SWA CONSULTING INC.

SWA Consulting Inc. (formerly Surface, Ward, and Associates) provides analytics and evidence-based solutions for clients using the principles and methods of industrial/organizational (I/O) psychology. Since 1997, SWA has advised and assisted corporate, non-profit and governmental clients on:

- Training and development
- Performance measurement and management
- Organizational effectiveness
- Test development and validation
- Program/training evaluation
- Work/job analysis
- Needs assessment
- Selection system design
- Study and analysis related to human capital issues
- Metric development and data collection
- Advanced data analysis

One specific practice area is analytics, research, and consulting on foreign language and culture in work contexts. In this area, SWA has conducted numerous projects, including language assessment validation and psychometric research; evaluations of language training, training tools, and job aids; language and culture focused needs assessments and job analysis; and advanced analysis of language research data.

Based in Raleigh, NC, and led by Drs. Eric A. Surface and Stephen J. Ward, SWA now employs close to twenty I/O professionals at the masters and PhD levels. SWA professionals are committed to providing clients the best data and analysis upon which to make evidence-based decisions. Taking a scientist-practitioner perspective, SWA professionals conduct model-based, evidence-driven research and consulting to provide the best answers and solutions to enhance our clients' mission and business objectives. SWA has competencies in measurement, data collection, analytics, data modeling, systematic reviews, validation, and evaluation.

For more information about SWA, our projects, and our capabilities, please visit our website ([www.swa-consulting.com](http://www.swa-consulting.com)) or contact Dr. Eric A. Surface ([esurface@swa-consulting.com](mailto:esurface@swa-consulting.com)) or Dr. Stephen J. Ward ([sward@swa-consulting.com](mailto:sward@swa-consulting.com)).

## APPENDIX A: EXAMPLES

Appendix A provides several different examples of trainee selection and language assignment. The following example illustrates an example using the DLAB-WPT<sup>TM</sup> composite cut scores from Table 2 (p. 6). However, a similar process would be used with any composite or test score.

*Appendix A, Table 1. Recommended DLAB-WPT<sup>TM</sup> Composite Cut Scores by Language*

| Language               | Cut Score | No Cut Used |          |          | If Cut Used |          |          |
|------------------------|-----------|-------------|----------|----------|-------------|----------|----------|
|                        |           | Selected    | Exceeded | Exceeded | Selected    | Exceeded | Exceeded |
| CAT I                  |           |             |          |          |             |          |          |
| French                 | 50        | 131         | 38       | 29%      | 60          | 26       | 43%      |
| Spanish                | 55        | 138         | 69       | 50%      | 44          | 32       | 73%      |
| CAT II                 |           |             |          |          |             |          |          |
| Indonesian             | 52        | 51          | 35       | 69%      | 27          | 21       | 78%      |
| CAT III                |           |             |          |          |             |          |          |
| Dari                   | 67        | 23          | 7        | 30%      | 4           | 2        | 50%      |
| Pashtu-Afghan          | 67        | 50          | 41       | 82%      | 16          | 14       | 88%      |
| Persian-Farsi          | 65        | 15          | 3        | 20%      | 5           | 0        | 0%       |
| Russian                | 64        | 112         | 28       | 25%      | 45          | 15       | 33%      |
| Tagalog (Filipino)     | 41        | 25          | 20       | 80%      | 22          | 18       | 82%      |
| Thai                   | 56        | 10          | 8        | 80%      | 7           | 5        | 71%      |
| Urdu                   | 54        | 22          | 4        | 18%      | 15          | 3        | 20%      |
| CAT IV                 |           |             |          |          |             |          |          |
| Chinese-Mandarin       | 74        | 39          | 25       | 64%      | 18          | 14       | 78%      |
| Korean                 | 62        | 22          | 3        | 14%      | 17          | 2        | 12%      |
| Modern Standard Arabic | 71        | 115         | 62       | 54%      | 52          | 30       | 58%      |

*Using the recommended DLAB-WPT<sup>TM</sup> composite cut scores, how would you place the following individuals into language training?*

### Scenario

There are 4 available IAT slots and 4 available trainees with the following sets of scores:

- Trainee 1: DLAB = 105, WPT<sup>TM</sup> = 60
- Trainee 2: DLAB = 75, WPT<sup>TM</sup> = 96
- Trainee 3: DLAB = 80, WPT<sup>TM</sup> = 55
- Trainee 4: DLAB = 60, WPT<sup>TM</sup> = 85

From a cut score perspective, the following steps should be considered.

1. Using the composite equation  $[(DLAB \text{ score} + WPT^{\text{TM}} \text{ score} \cdot .40) \cdot 2]$ , calculate each trainees composite score.
  - a. Trainee 1 = 65
  - b. Trainee 2 = 57
  - c. Trainee 3 = 51
  - d. Trainee 4 = 47
2. Using the DLAB-WPT<sup>TM</sup> composite cut scores in the table above, the 4 trainees should be assigned into the following languages:
  - a. Trainee 1 – Persian-Farsi because he meets the cut score.
  - b. Trainee 2 – Thai because he slightly exceeds the Thai cut score of 56, but does not reach the next cut score of 62 for Korean.
  - c. Trainee 3 – French because he slightly exceeds the French cut score of 50, but does not reach the next cut score of 52 for Indonesian.
  - d. Trainee 4 – Tagalog because he exceeds the Tagalog cut score of 41, but does not reach the next cut score of 50 for French.

In this case, if a top-down assignment approach had been used, the same assignments would NOT have resulted because of Tagalog. Trainee 3 would have been assigned to Tagalog instead of French, and Trainee 4 would have been assigned to French instead of Tagalog. Using cut scores does allow you to take advantage of situations in which the traditional language difficulty ratings do not reflect the reality of language learning at USAJFKSWCS.

The next examples focus on the use of single test scores (not a composite) but the basic process is the same.

The next set of examples apply to Tables 3, 5 and 6 (pp. 7-9) or single tests used for assignment; however, the examples here will focus on using the recommended DLAB cut scores.

*Appendix A, Table 2. Recommended DLAB Cut Scores by Language*

| Language               | Cut Score | No Cut Used |          |          | If Cut Used |          |          |
|------------------------|-----------|-------------|----------|----------|-------------|----------|----------|
|                        |           | Selected    | Exceeded | Exceeded | Selected    | Exceeded | Exceeded |
| CAT I                  |           |             |          |          |             |          |          |
| French                 | 77        | 131         | 38       | 29%      | 58          | 24       | 41%      |
| Spanish                | 87        | 138         | 69       | 50%      | 41          | 29       | 71%      |
| CAT II                 |           |             |          |          |             |          |          |
| Indonesian             | 83        | 51          | 35       | 69%      | 26          | 20       | 77%      |
| CAT III                |           |             |          |          |             |          |          |
| Dari                   | 104       | 23          | 7        | 30%      | 7           | 4        | 57%      |
| Pashtu-Afghan          | 104       | 50          | 41       | 82%      | 17          | 13       | 77%      |
| Persian-Farsi          | 101       | 15          | 3        | 20%      | 5           | 0        | 0%       |
| Russian                | 99        | 112         | 28       | 25%      | 40          | 15       | 38%      |
| Tagalog (Filipino)     | 67        | 25          | 20       | 80%      | 21          | 17       | 81%      |
| Thai                   | 90        | 10          | 8        | 80%      | 7           | 6        | 86%      |
| Urdu                   | 83        | 22          | 4        | 18%      | 15          | 3        | 20%      |
| CAT IV                 |           |             |          |          |             |          |          |
| Chinese-Mandarin       | 116       | 39          | 25       | 64%      | 20          | 15       | 75%      |
| Korean                 | 98        | 22          | 3        | 14%      | 17          | 2        | 12%      |
| Modern Standard Arabic | 111       | 115         | 62       | 54%      | 39          | 23       | 59%      |

*Using the recommended DLAB cut scores, how would you place the following individuals into language training?*

**Scenario 1: Top-down assignment approach**

There are 8 available IAT slots and 8 available trainees with the following DLAB scores: 70, 75, 80, 84, 95, 102, 117, and 120. From a top-down perspective, the following steps should be considered.

1. Rank-order the trainees DLAB scores from highest to lowest: 120, 117, 102, 95, 84, 80, 75, 70
2. Assuming there is only one slot available for each language, trainees with the highest DLAB scores should be placed into the more difficult languages.
3. The trainees with DLAB scores of 120, 117, and 102 should be placed in the three CAT IV languages, in order of difficulty with 120 in the most difficult language.

4. The 5 remaining trainees should all be placed in CAT III languages. The trainee scoring 95 placed into the most difficult CAT III language, trainee scoring 84 in the next most difficult CAT III language, etc.

### ***Scenario 2: Cut score approach***

There are 5 available IAT slots and 6 available trainees with the following DLAB scores: 62, 77, 83, 90, 103, and 112. From a cut score perspective, the following steps should be considered.

1. The trainee with a DLAB score of 62 can immediately be cut because he falls below the lowest cut score of 67 (i.e., Tagalog).
2. The remaining 5 trainees should be rank ordered from highest to lowest: 112, 103, 90, 83, 77
3. The trainee with a DLAB of 112 should be placed into Modern Standard Arabic because he exceeds the 111 cut score, but does not meet the 116 cut for Chinese-Mandarin.
4. The trainee with a DLAB of 103 should be placed into Persian-Farsi because he exceeds the 101 cut score, but does not meet the 104 cut score for Dari or Pashtu-Afghan.
5. The trainee with a DLAB of 90 should be placed into Thai because he meets the cut score.
6. The trainee with a DLAB of 83 could be placed into Indonesian or Urdu. However, using the top-down assignment protocol, he should be placed into Urdu because it is a more difficult language.
7. Lastly, the trainee with a DLAB of 77 should be placed into French because he meets the cut score.

It should be noted that top-down and cut score approaches can produce slightly different results. In general, the top-down approach is easier to execute, but the cut score approach will be more refined.