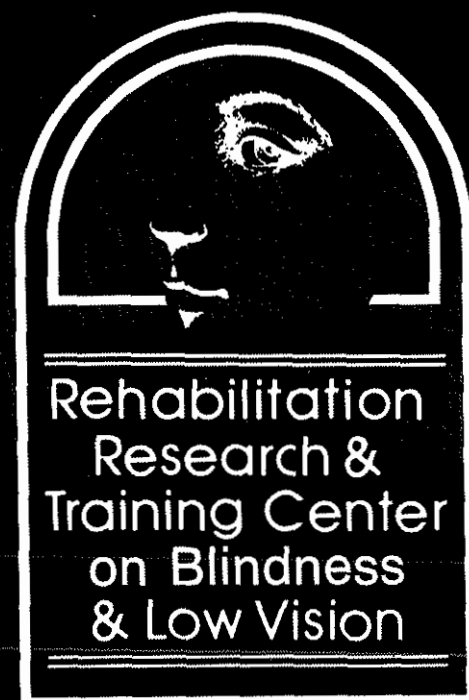


Vocational Education Readiness Tests

Modification and
Adaptation for
Blind and Visually
Impaired Persons



VOCATIONAL EDUCATION READINESS TESTS

Modification and Adaptation for Blind and Visually Impaired Persons

Executive Summary

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BACKGROUND OF THE RESEARCH PROJECT

The goal of the project, Modification and Adaptation of the Vocational Education Readiness Test (VERT), has been the development of additional assessment tools for evaluating blind, partially sighted, or severely visually impaired persons for entrance into vocational education training programs. The Rehabilitation Research and Training Center on Blindness and Low Vision (RRTC-BLV) at Mississippi State University has adapted work sample manuals in auto mechanics (VERT-AM), in basic wiring (VERT-BW), and in quantity foods (VERT-QF). A separate report was issued for industrial sewing (VERT-IS).

The VERT project was developed from three previously completed projects to determine entry level skills for vocational/technical training and to develop assessment methods for use with persons having secondary learning disabilities and mental retardation. The current project builds upon the work done by Thomas et al. (1978) in their development of the VERT for disabled, sighted students. Thomas et al. (1978) identified specific skills necessary for success in the following vocational programs: auto mechanics, basic wiring, carpentry, home economics, masonry, plumbing, welding, and food preparation. VERT manuals were initially developed at the Mississippi State University Research and Curriculum Unit for the purpose of identifying the beginning skills necessary for entrance into vocational education programs in secondary schools. Work samples were constructed to assess these skills.

Most work samples developed for use in rehabilitation facilities have focused upon immediate job placement (Botterbusch, 1982). The VERT project, in contrast, focuses on the need for work samples to evaluate clients' entry level vocational needs. Clients may neither "pass" nor "fail" the VERT work samples. Rather, a client either demonstrates having the prerequisite skills needed to enter a particular vocational education training program or shows the need for additional training in the area.

The result of this VERT project was the development of work sample tasks for auto mechanics, basic wiring, and quantity foods. A fourth work sample, industrial sewing, was tested and found to lack validity and reliability. Therefore, the use of the industrial sewing work sample is not being recommended.

RESEARCH RESULTS

Almost All of the Auto Mechanics Work Sample Tasks Have Test-Retest Reliability and Concurrent Validity

The test-retest reliability coefficients were determined by correlating scores obtained from two administrations of the VERT-AM on the norm group (within a one month interval). Concurrent validity was calculated by correlating the VERT-AM tasks with the Valpar Work Sample and the Wide Range Achievement Test (WRAT).

The Measuring Skills task is recommended for use based on the significant reliability result. Data was not available to determine concurrent validity for Measuring Skills. The Fine Finger Dexterity and Size Discrimination, Prone Position, Supine Position, Stooping Position, Torque, and Screwdriver exercises are recommended because of the positive reliability and concurrent validity results. These tasks are reliable measures over time, and they can be correlated with other similar tests.

The last three tasks are more academic than skill-oriented in nature.

Basic Terminology is a reliable task, but it showed low validity when correlated with WRAT scores. Overall, Computational Skills is a reliable and valid test. However, in further analysis, addition and subtraction proved to be very reliable, while multiplication and division were not reliable. The Reading Problems task was neither reliable nor valid; therefore, evaluators should interpret Reading Problems task scores carefully.

Almost All of the Basic Wiring Work Sample Tasks Have Test-Retest Reliability and Predictive Validity

Test-retest reliability coefficients were calculated by correlating scores obtained by two administrations of the VERT-BW on the norm group (within a one month interval). The predictive validity of this work sample was obtained by examining the relationship between the respondents' scores on all tasks specified in the VERT-BW work sample and their employee ratings. Respondents' quality measures (i.e., number of errors or quality rating of the task) are correlated with the quality of actual job performance rated by their supervisors; respondents' time (length of time required to complete the task) is correlated with the production quantity of the actual job performance as recorded by their supervisors. Job ratings were available for various types of jobs; however, none involved basic wiring work.

The results imply that the Measuring Skills, Wire Stripper, Pigtail Splice, Insulating Spliced Wires, Type-B Solderless Connectors, and Duplex Wall Receptacle tasks are reliable measures of both time and quality. The Plastic Solderless Connectors task is reliable with regard to performance quality, but not with regard to performance time.

In the second analysis, only the Plastic Solderless Connector task demonstrates significant predictive validity for both time and quality. All other tasks show significant predictive validity for quality, but not time. However, for all these tasks except Insulating Spliced Wires, the correlation for time is low, but in the predicted positive direction.

Almost All of the Quantity Foods Work Sample Tasks Have Reliability and Concurrent Validity

Due to time limitations, the posttest of the quantity foods work sample was not administered and, therefore, the internal consistency method of equivalence was used to estimate reliability. Concurrent validity was calculated by correlating the VERT-QF tasks with the General Aptitude Test, the Oral Directions Test, and the WRAT.

The VERT-QF is considered to be adequately reliable based on the findings of the analysis. Some difficulty was encountered due to the small number of respondents and the heterogeneity of the test items being grouped together.

The results of the validity analysis imply that the Recipes, Basic Terminology, Computational Skills, and Reading Problems tasks are valid measures of performance quality. The relatively high but nonsignificant coefficient found for the Measuring Skills, Oven Control and Timer, and Proportional Servings tasks suggests that their use may be recommended. The Dry Measurement by Volume, Liquid Measurement by Volume, and the Dry Measurement by Weight tasks of this test should be used with caution due to their negatively related validity coefficients.

While Some of the Industrial Sewing Work Sample Tasks Showed Test-Retest Reliability, None Demonstrated the Expected Predictive Validity

Test-retest reliability coefficients and predictive validity coefficients were calculated in the same manner as for the basic wiring work sample. Results of this analysis imply that the Needle Threading and the Pattern Cutting tasks are reliable measures of both performance time and performance quality. The Sewing exercise is a reliable measure for time, but the Measuring Skills tasks is not a reliable measure for this norm group.

Only the Sewing task demonstrates predictive validity for performance quality. However, the correlation was not in the predicted positive direction. All the other tasks, except Measuring Skills, demonstrate negative correlations suggesting that timing for this task may not be a measure of future training outcome. Measuring Skills is in the predicted positive direction for time, but not for quality.

RECOMMENDATIONS

Task Changes Should Be Made to the Industrial Sewing Work Sample and New

Pattern Cutting and Measuring Skills tasks should be deleted because they do not accurately reflect the job of a person performing industrial sewing tasks. The Sewing and Needle Threading tasks should be retained because of their significant reliability results and promising validity findings. Both of these tasks require some redesigning to make them more representative of industrial sewing tasks. Further tasks which incorporate samples of work actually performed by industrial sewers need to be included in an industrial sewing work sample.

Once these changes have been implemented, reliability and validity studies should be initiated. If they show that the revised tasks are reliable and valid measures of an industrial sewer's job, percentile charts of a norm group could be constructed.

The Auto Mechanics, the Basic Wiring, and the Quantity Foods Work Samples Should Undergo Further Testing

Because of the exploratory nature of this study, the number of blind and visually impaired people who were tested is small. Further tests should be performed with additional subjects to possibly strengthen these validity and reliability findings.

The Auto Mechanics, the Basic Wiring, and the Quantity Foods Work Samples May Be Used to Assess the Ability and Knowledge of Blind and Visually Impaired People Who Are Considering Entrance into a Vocational Education Training Program

Separate percentile charts were constructed for each task, as well as an overall score for each work sample. A client's efforts can be compared with the norm group for performance on both time and quality. Individual task scores can assist an evaluator in determining if that client is ready to begin a vocational training course. The work sample will help the evaluator and the client to identify job related strengths and weaknesses which the client possesses. If performance on a particular task is below a specified

level, remedial instruction in the skills required to perform that task may be needed prior to admission into a vocational training program.

These work samples should be used in conjunction with other tests and information available about the candidate. Dexterity tests are particularly important because of the job skill requirements. In addition to these tests, the evaluator should integrate test findings with the personality, intellect, and occupational interests of the client. Observations made during the work sample tasks as well as the candidate's feelings about the assessment experience should be made part of the total evaluation.

Manuals describing the auto mechanics, the basic wiring, and the quantity foods work samples are available from the RRTC-BLV. These manuals contain information about required materials, instructions for administering the work samples, and performance norms.

Because the Industrial Sewing module did not reveal substantial valid results, it has not been published. However, information on the results of the VERT-IS module is available upon request from the RRTC-BLV.

REFERENCES

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