DOCUMENT RESUME

ED 393 878 TM 024 754

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TITLE Adapting Assessment Procedures for Delivery via an Automated Format.
PUB DATE Jun 95
NOTE 15p.; Paper presented at the Annual Meeting of the International Personnel Management Association Assessment Council Conference (19th, New Orleans, LA, June 25-29, 1995).
PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Administrators; *Computer Assisted Testing; Decision Making; *Educational Assessment; *Job Analysis; *Personnel Selection; Professional Personnel; *Rating Scales; *Test Construction; Test Validity; Training
IDENTIFIERS *Administrative Careers with America; Behavioral Consistency Method; Biodata; Office of Management and Budget

ABSTRACT

The Office of Personnel Management (OPM) decided to explore alternative examining procedures for positions covered by the Administrative Careers with America (ACWA) examination. One requirement for new procedures was that they be automated for use with OPM's recently developed Microcomputer Assisted Rating System (MARS), a highly efficient system for presenting staffing options to agencies. In addition to the ACWA examination, OPM decided to develop rating schedules that could be used by agencies to hire at the entry level for professional and administrative occupations. The development of the new ACWA examination is described, including its biodata component and the occupational analysis that went into its preparation. An innovative approach was used to develop training and experience items that could be answered on a scannable answer sheet. Ratings developed by OPM psychologists were established for the ACWA occupations, and these were incorporated into rating schedules through the Behavioral Consistency Method. Validity issues in the Behavioral Consistency Method and the rating schedules are explored. (Contains 27 references.) (SLD)

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

ADAPTING ASSESSMENT PROCEDURES FOR DELIVERY VIA AN AUTOMATED FORMAT

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Presented as part of the paper session Application of Information Technology to Personnel Assessment at the International Personnel Management Association Assessment Council Conference on Public Personnel Assessment, New Orleans, LA, June 25-29, 1995.

IR024754

ADAPTING ASSESSMENT PROCEDURES FOR DELIVERY VIA AN AUTOMATED FORMAT[1]

INTRODUCTION

Based on recommendations from the National Performance Review, the General Accounting Office, and the Merit Systems Protection Board, as well as feedback from agencies on the current hiring process, the Office of Personnel Management (OPM) decided to explore alternative examining procedures for positions covered by the Administrative Careers with America (ACWA) examination. (See Table 1 for the list of occupations covered under the ACWA program.) One requirement for these new procedures was that they be automated for use with OPM's recently developed Microcomputer Assisted Rating System (MARS). MARS is a highly efficient delivery system for presenting staffing options to agencies such as rating schedules, tests, and sample questions for structured interviews. Thus, in addition to the ACWA examination, OPM decided to develop rating schedules that could be used by agencies to hire at the entry level for professional and administrative occupations. Both the ACWA examination and the rating schedules can be delivered via MARS.

Rating Schedules as an Examining Method

Although "rating schedule" is a generic term referring to a number of different procedures, most Federal rating schedules evaluate an applicant's relevant training, education, and/or experience. Eligible applicants receive ratings from 70 to 100 based on the type and amount of training and experience that they possess.

The Behavioral Consistency Method. The traditional Behavioral Consistency Method of training and experience evaluation, originally developed at OPM (see Schmidt, Caplan, Bemis, Decuir, Dunn, & Antone, 1979), asks candidates to describe their major achievements in several job-related areas. The job-related dimensions have been identified by supervisors as those dimensions that differentiate employees who are performing at superior and minimally acceptable levels. The achievements provided by the candidates are evaluated using benchmark achievements that have been scaled (i.e., assigned point values) by subject matter experts (SMEs).

Selection methods that assess training and experience attempt to predict future job performance from past related accomplishments. A rating (score) is assigned through systematic, judgment-based evaluations of information provided by applicants on resumés, applications, or other documents (McDaniel, Schmidt, & Hunter, 1988).

[1] The opinions expressed in this paper are the authors' and do not necessarily represent the official policy of the U.S. Office of Personnel Management.

Table 1 ACWA OCCUPATIONS BEING STUDIED

Group 1. Health, Safety, and Environmental Occupations

Series	Title
0018	Safety and Occupational Health Management
0023	Outdoor Recreation Planning
0028	Environmental Protection Specialist
0673	Hospital Housekeeping Management
0685	Public Health Program Specialist

Group 2. Writing and Public Information Occupations

Series	Title
1001	General Arts and Information
1035	Public Affairs
1082	Writing and Editing
1083	Technical Writing and Editing
1147	Agricultural Market Reporting
1412	Technical Information Services
1421	Archives Specialist

Group 3. Business, Finance, and Management Occupations

Series	Title
0011	Bond Sales Promotion
0106	Unemployment Insurance
0346	Logistics Management
0391	Telecommunications
0501	Financial Admin. and Programs
0560	Budget Analysis
0570	Financial Institution Examining
1101	General Business and Industry
1102	Contract Specialist
1103	Industrial Property Management
1104	Property Disposal
1130	Public Utilities Specialist
1140	Trade Specialist
1145	Agricultural Program Specialist
1146	Agricultural Marketing
1150	Industrial Specialist
1160	Financial Analysis
1163	Insurance Examining
1165	Loan Specialist
1170	Realty
1171	Appraising and Assessing
1173	Housing Management
1176	Building Management
1910	Quality Assurance Specialist
2001	General Supply
2003	Supply Program Management
2010	Inventory Management
2030	Distribution Facilities and Storage Management

Group 3. Business, Finance, and Management Occupations (continued)

Series	Title
2032	Packaging
2050	Supply Cataloging
2101	Transportation Specialist
2110	Transportation Industry Analysis
2125	Highway Safety Management
2130	Traffic Management
2150	Transportation Operations

Group 4. Personnel, Administration, and Computer Operations

Series	Title
0142	Manpower Development
0201	Personnel Management
0205	Military Personnel Management
0212	Personnel Staffing
0221	Position Classification
0222	Occupational Analysis
0223	Salary and Wage Administration
0230	Employee Relations
0233	Labor Relations
0235	Employee Development
0244	Labor Management Relations Examining
0246	Contractor Industrial Relations
0301	Miscellaneous Administration and Programs
0334	Computer Specialist (Trainee)
0341	Administrative Officer
0343	Management Program Analysis
1715	Vocational Rehabilitation

Group 5. Benefits Review, Tax, and Legal Occupations

Series	Title
0105	Social Insurance Administration
0187	Social Services
0270	Civil Service Retirement
0526	Tax Technician
0950	Paralegal Specialist
0958	Pension Law Specialist Series
0962	Contact Representative
0965	Land Law Examining
0967	Passport and Visa Examining
0987	Tax Law Specialist
0990	General Claims Examining
0991	Worker's Compensation Claims Examining
0993	Railroad Retirement Claims Examining
0994	Unemployment Compensation Claims Examining
0996	Veterans Claims Examining

Group 6. Law Enforcement and Investigation Occupations

Series	Title
0025	Park Ranger
0080	Security Administration
0132	Intelligence
0249	Wage and Hour Compliance
1169	Internal Revenue Officer
1801	Civil Aviation Security Specialist
1810	General Investigator
1811	Criminal Investigator
1812	Game Law Enforcement
1816	Immigration Inspection
1831	Securities Compliance Examining
1854	Alcohol, Tobacco, and Firearms Inspection
1864	Public Health Quarantine Inspection
1889	Import Specialist
1890	Customs Inspector

Group 7. Positions with Positive Education Requirements

Series	Title
0020	Community Planning
0101	Social Science
0110	Economist
0130	Foreign Affairs
0131	Internal Relations
0140	Manpower Research and Analysis
0150	Geography
0170	History
0180	Psychology
0184	Sociology
0190	General Anthropology
0193	Archaeology
1015	Museum Curator
1420	Archivist
1701	General Education and Training
1720	Education Program

Validity of rating schedules. The validity of rating schedules that assess training and experience usually is established using a content validity model. The tasks or behaviors measured in the rating schedules are content valid because they sample the kinds of tasks or behaviors required in the occupation. Similarly, the competencies measured in the rating schedules are content valid because they sample the same competencies required for effective performance on the job.

In addition, there are a few reported studies of the predictive validity of these instruments. McDaniel et al. (1988) conducted the most comprehensive review of the validity of methods for rating training and experience in personnel selection. The highest validity was found for the Behavioral Consistency Method (.45). The Behavioral Consistency Method yields useful levels of validity with little variance from study to study, thus, supporting validity generalization. Because of its demonstrated level of criterion-related validity, the Behavioral Consistency Method was chosen as the model to follow when developing the rating schedules for these entry-level occupations.

Adverse impact[2] of rating schedules. Very little evidence is available on the adverse impact of rating schedules. Hough (1984) has reported effect sizes of about 1/3 of a standard deviation. Thus, rating schedules have less adverse impact than cognitive ability tests, which typically show an effect size of approximately one standard deviation.

Use of Biodata

The current ACWA examination, which assesses cognitive skills, includes a biodata component, the Individual Achievement Record (IAR), which asks questions about an applicant's experience, skills, achievements in school, employment, and other activities. Validities of the IAR for predicting job success in ACWA occupations have been well documented in a large-scale validity study (Gandy, Dye and MacLane, 1994; Gandy, Outerbridge, Sharf, & Dye, 1989). The construct validity of the IAR has also been documented (Dye, 1990). In addition, Gandy et al., (1994) found that the adverse impact of the IAR is comparable to that typically found for rating schedules. MacLane (1991) recently developed a shortened form of the IAR. This inventory was reviewed to identify verifiable biodata items for inclusion in the new ACWA rating schedules.

Thus, the newly developed examining instrument is made up of some of the verifiable biodata items that research has shown predict job performance and an application form that is based on the Behavioral Consistency Method. The two methods are similar in that both assess applicants based on their past accomplishments. In addition, they both produce relatively little adverse impact when compared to other selection methods, and past research shows that the IAR is valid for ACWA occupations.

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[2]Technically, adverse impact refers to selection ratios. However, in the personnel psychology literature, it often refers to mean differences in performance for groups expressed in standard deviation units.

OCCUPATIONAL ANALYSIS

OPM collected occupational analysis data on each of the 110 professional and administrative occupations currently covered by the ACWA examination program. Data were collected for the entry-level grades for these occupations, typically grades 5 and 7. To do this, OPM used the Multipurpose Occupational Systems Analysis Inventory--Closed-Ended (MOSAIC) approach to occupational analysis. MOSAIC is an occupational analysis method of gathering data for a variety of human resource management purposes (U.S. Office of Personnel Management, 1992). Unlike many other occupational analysis methods, MOSAIC entails constructing a survey based on an exhaustive literature review of the target occupations and provides results of the occupational analysis in an automated format.

Literature Review

The MOSAIC literature review began with acquiring lists of tasks and competencies for the occupations under analysis from a wide range of sources. These sources included task and competency documentation from Federal agencies, previous OPM studies, and well-established competency taxonomies such as those from the SCANS (Secretary's Commission on Achieving Necessary Skills) report (SCANS Report for America 2000, 1992).

OPM requested task data from the two agencies that employed the most incumbents in each occupation for all grade levels. OPM entered all the task information into a database and grouped the tasks into general task statements using Alpha Four software (Alpha Software Corporation, 1993).

Concurrent with the development of a task list, OPM constructed a competency list. OPM relied on several sources to develop a comprehensive competency list. Two primary sources for competencies were previous MOSAIC studies (Gregory, Armitage, Corts, & Park, 1992; Rodriguez, Usala, & Shoun, in progress; U.S. Office of Personnel Management, 1992) and the ACWA occupational analysis that was conducted for the ACWA examination in 1990 (O'Leary, Rheinstein, & McCauley, 1991). The competency lists from these studies were supplemented with competencies from other sources, including agencies' competency lists, OPM Position Classification Standards, and the SCANS report. The final ACWA competency list is presented in Table 2.

Psychologists' Ratings

Once the task and competency lists were established, OPM psychologists were asked to make two ratings. First, they rated each competency for importance to each of the 110 ACWA occupations using general occupation descriptions and selected agency position descriptions. In addition, they linked the tasks to the competencies necessary to perform the tasks. Together these ratings were used to identify which competencies to include on the rating schedules. In addition to the psychologists' ratings, a large-scale occupational analysis survey is currently underway which involves collecting task and competency ratings from ACWA supervisors and incumbents. This information will be used to revise the rating schedules as needed.

Table 2 MOSAIC Competencies: ACWA

Reading - Understands and interprets written material, including rules, regulations, instructions, reports, charts, graphs, and tables; applies what is learned from written material to specific situations.

Writing *- Uses correct English grammar, punctuation, and spelling to communicate facts, ideas, and messages in a succinct and organized manner; produces written information that is appropriate for the intended audience.*

Arithmetic - Performs computations such as addition, subtraction, multiplication, and division correctly using whole numbers, fractions, decimals, and percentages.

Mathematical Reasoning - Solves practical problems by choosing appropriately from a variety of mathematical and statistical techniques.

Oral Communication *- Expresses ideas and facts to individuals or groups effectively, taking into account the audience and nature of the information (for example, sensitive, controversial); makes clear and convincing oral presentations; listens to others.*

Creative Thinking *- Uses imagination to develop new insights into situations and applies innovative solutions to problems; designs new methods where established methods and procedures are inapplicable or are unavailable.*

Decision Making *- Makes sound and well-informed decisions; perceives the impact and implications of decisions; commits to action, even in uncertain situations, to accomplish organizational goals; causes change.*

Reasoning - Discovers or selects rules, principles, or relationships between facts and other information; is able to make correct inferences from available information.

Problem Solving *- Identifies and analyzes problems; gathers, interprets, and evaluates information to determine its accuracy and relevance; uses sound judgment to generate and evaluate alternatives and recommend a solution.*

Mental Visualization - Sees things in the mind by mentally organizing and processing symbols, pictures, graphs, objects, or other information (for example, sees a building from a blueprint, or sees the flow of work activities from reading a work plan).

Learning *- Uses efficient learning techniques to acquire and apply new knowledge and skills.*

Self-Esteem - Believes in own self-worth; maintains a positive view of self and displays a professional image.

Teamwork *- Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals.*

Integrity/Honesty - Displays high standards of ethical conduct and understands the impact of violating these standards on an organization, self, and others; chooses an ethical course of action; is trustworthy.

Self-Management *- Sets well-defined and realistic personal goals; displays a high level of initiative, effort, and commitment towards completing assignments in a timely manner with minimal supervision; is motivated to achieve; demonstrates responsible behavior.*

Interpersonal Skills *- Shows understanding, friendliness, courtesy, tact, empathy, concern, and politeness to others; relates well to people from varied backgrounds and different situations; is sensitive to cultural diversity, race, gender, and other individual differences in the workforce.*

Planning and Evaluating *- Organizes work, sets priorities, and determines resource requirements; determines objectives and strategies to achieve them; monitors and evaluates progress against goals.*

Financial Management *- Prepares, justifies, and/or administers the budget for program areas; plans, administers, and monitors expenditures to ensure cost-effective support of programs and policies.*

Managing Human Resources - Plans, distributes, and monitors work assignments; evaluates work performance and provides feedback to others on their performance.

Leadership *- Interacts with others to influence, motivate, and challenge them.*

Teaching Others *- Helps others learn; identifies training needs; provides constructive feedback; coaches others on how to perform tasks; acts as a mentor.*

Customer Service *- Works and communicates with clients and customers (that is, any individuals who use or receive the services or products that your work unit produces, including the general public, individuals who work in your agency, other agencies, or organizations outside the Government) to provide information and satisfy their expectations; committed to quality services.*

Organizational Awareness - Knows how social, political, organizational, and technological systems work and operates effectively within them; this includes the policies, procedures, rules, and regulations of the work or organization.

Influencing/Negotiating *- Persuades others to accept recommendations; works with others towards an agreement; negotiates to find mutually acceptable solutions.*

Technology Application *- Uses computers and computer applications (for example, spreadsheet, word processing, database management, and graphics software) to analyze and communicate information in the appropriate format (for example, line graphs, bar charts, pie charts, tables, narrative); uses technology to work more efficiently and improve work processes and products.*

Flexibility *- Is open to change and new information; adapts behavior and work methods in response to new information, changing conditions, or unexpected obstacles; effectively deals with pressure and ambiguity.*

Technical Competence - Uses knowledge that is acquired through formal training or extensive on-the-job experience to perform one's job; works with, understands, and evaluates technical material related to the job.

Perceptual Speed - Sees detail in words, numbers, pictures, and graphs, quickly and accurately.

Physical Strength and Agility - Ability to bend, lift, climb, stand, or walk for long periods of time; ability to exert oneself physically over time; ability to perform moderately laboring work.

Memory - Recalls information that has been presented previously.

Eye-Hand Coordination - Accurately coordinates one's eyes with one's fingers, wrists, or arms to move, carry, or manipulate objects, or to perform other job-related tasks.

Vision - Understands where the organization is headed and how to make a contribution; recognizes opportunities to help the organization accomplish its objectives.

RATING SCHEDULE DEVELOPMENT

The Behavioral Consistency Method was used to develop scaled accomplishments suitable for use across the ACWA occupations. Accomplishments were collected for the competencies rated as important by OPM psychologists and were scaled by supervisors of ACWA occupations. A rating schedule was developed for each occupation that included accomplishments related to the competencies rated as important for each occupation. Items from the IAR were also included on each occupation-specific rating schedule.

To facilitate automation efforts, the rating schedules were designed in a self-rating format. Mabe and West (1981), in an examination of various factors affecting self-ratings, suggested that the most important factor contributing to the validity of self-ratings is the expectation that the self-ratings will be checked objectively. Thus, the rating schedules include several features to indicate the responses will be checked: (1) a general statement is included on the application form stating that misrepresentation can lead to dismissal, (2) applicants are required to submit a resumé or similar information along with their applications that can be used to verify their responses to questions on the rating schedule, and (3) applicants are told that the selecting official may review the information provided on the rating schedule during the selection interview.

The major tasks and steps that were followed to develop rating schedules for each ACWA occupation are described below.

Task 1: Accomplishments Database Development

Step 1: Identify rating competencies to assess with the rating schedule method. The competencies identified in the occupational analysis literature review, along with the competencies currently assessed by the ACWA examination, were considered for use on the rating schedules. During the occupational analysis, OPM psychologists rated how important each competency was for successful performance in each ACWA occupation. These ratings were reviewed to identify competencies that were consistently rated as important across occupations. These competencies were retained for further consideration.

The remaining competencies were reviewed for feasibility of assessment. A panel of OPM personnel research psychologists experienced in rating schedule development identified competencies that were suitable for assessment by the rating schedule method. This final set of competencies, the rating competencies, was the target of subsequent rating schedule development activities. These ratings are shown in italics in Table 2.

Step 2: Collect accomplishments. An *Accomplishments Record Form* was developed for collecting accomplishments for the rating competencies from ACWA applicants. The Form was distributed to ACWA applicants who provided accomplishments on a voluntary basis during May and June of 1994. The applicants were informed that the accomplishments they provided were being collected for test development purposes and would not be scored. They were instructed to provide accomplishments from their educational experience, work experience, and volunteer work. Over 3,000 accomplishments were collected on 17 competencies.

Task 2: Scaling of Accomplishments

Step 3: Develop Accomplishments Survey. The accomplishments collected in Step 2 were reviewed by OPM psychologists and rewritten in a general form that would represent specific, but related, accomplishments. Redundant accomplishments were combined or eliminated. Each accomplishment was stated so that it could be used for all ACWA occupations. The revised accomplishments were formatted as an *Accomplishments Survey* for SMEs to use in classifying and scaling the accomplishments.

Step 4: Collect SME accomplishment scaling data. Subject matter expert panels, consisting of supervisors of ACWA incumbents, were formed to provide accomplishment scaling data. The supervisors convened at the OPM regional offices, and OPM psychologists facilitated the groups in completing the *Accomplishments Survey*.

The group facilitator helped familiarize the supervisors with the competencies and their definitions. First, the supervisors were instructed to indicate whether each accomplishment was representative of the competency to which it had been assigned. Next, they were instructed to assign each accomplishment a value of high, medium, or low, indicating whether the accomplishment demonstrated a high, medium or low level of proficiency on that competency. Finally, they were asked to provide feedback on the clarity and appropriateness of the accomplishments.

Task 3: Rating Schedule Assembly

Step 5: Identify accomplishments to include on rating schedules. The accomplishment scaling data provided by the supervisors were analyzed to identify accomplishments classified at the high, medium, and low proficiency levels for each competency. OPM psychologists also used the proficiency ratings to determine which accomplishments could be combined, based on similar content and proficiency level ratings, and which accomplishments could be eliminated, either because they were not representative of the competency or because they received very low proficiency level ratings (meaning the applicant should not receive credit for performing that low-level accomplishment). Accomplishments retained for each competency represent educational experience, work experience, volunteer work, and, in some cases, personal or home-related experiences.

Step 6: Assemble and review occupation-specific rating schedules. The occupational analysis data were used to determine which competencies to include on the rating schedules for each occupation. A rating schedule was assembled for each occupation that included instructions for recording responses on a scannable answer sheet, minimum qualification items, selected IAR items, and scaled accomplishments associated with the competencies identified as important for that occupation by the occupational analysis.

OPERATIONAL IMPLEMENTATION

MARS is an integral part of the implementation of the ACWA rating schedules. MARS was developed to provide OPM Service Centers and Federal agencies with an efficient and flexible system for examining and rating applicants that also reduces staff time and costs. The system can be used to design rating schedules, scan responses, rate applicants, and generate a list of eligible candidates. The components required for this processing are a personal computer and an optical scanner.

Because of the automated format, applicants had to be able to respond to the rating schedule using a scannable form. Thus, the accomplishment items were worded so that applicants could respond either "yes" or "no" to each item. This is a significant departure from the traditional Behavioral Consistency Method, which requires applicants to provide open-ended responses describing their accomplishments for job-related competencies.

The instructions and randomized rating schedule items were entered into MARS to create a rating schedule for each of the 110 ACWA occupations. In addition, point values for the accomplishment items were entered based on the weights assigned by the supervisors. Transmutation tables were developed to convert the raw scores to the 70 to 100 point range traditionally used in Federal ratings. (Additional points are added for veterans' preference.)

Potential applicants responding to a vacancy announcement receive the *Supplemental Qualifications Statement* (rating schedule) which includes background items, minimum qualifications items, IAR items, and accomplishment items, along with a scannable response form. Applicants are also required to submit a resumé or a standard application form, which can be used to verify their responses to the rating schedule items.

VALIDITY STRATEGIES

Discussions of the types of validity suggest that construct validity is the umbrella validity under which other traditional forms of validity fall (Arvey, Nutting, & Landon, 1992; Landy, 1986; Tenopyr, 1977). Thus, a number of different, but complementary, validity strategies are being used to validate the rating schedules.

Meta-Analytic Studies

Meta-analytic studies of the traditional Behavioral Consistency Method have shown that the procedure produces instruments with useful levels of validity. Moreover, the fact that the distributions of validity coefficients have small corrected standard deviations supports validity generalization (McDaniel et al., 1988). Although the number of studies in the database is somewhat limited, the studies do provide historical support for the validity of the procedure. Meta-analytic studies of biodata support validity generalization of this selection procedure as well (Rothstein, Schmidt, Erwin, Owens, & Sparks, 1990).

Content Validity

Rating schedules are typically validated using a content validity model. Schmidt et al. (1979) indicated that a content validity strategy is applicable to the development and validation of an examination using the Behavioral Consistency Method. The behaviors sampled in the accomplishments are content valid because they sample the kinds of achievements required to perform in the occupation. Schmidt et al. stated that the purpose of developing competencies is to point out and direct attention to the areas in the background of the applicants where the most valid accomplishments are likely to be found.

The Society for Industrial-Organizational Psychology's *Principles for the Validation and Use of Personnel Selection Procedures* (1987) support the use of content validity for accomplishments. Accomplishments can be justified by a similarity between the content of the personal history experience and the content of the occupation, regardless of whether or not the personal history experience and occupation as a whole are similar. As indicated in the *Uniform Guidelines on Employee Selection Procedures* (Federal Register, 1978), this relationship can be based on the similarity between the competencies or behaviors documented in the accomplishments and those of the occupation rather than between the exact content of the accomplishments and the job. For instance, a person with budgetary experience need not demonstrate experience with the specific budgetary items associated with an occupation for the accomplishments to be content valid, provided the competencies or behaviors in the accomplishments are similar to those required by the job. The rating schedule development process was based on the content validity model. Data from the psychologists' ratings (both the competency importance ratings and the task-competency linkages) and the large-scale occupational analysis currently underway will be used to provide evidence of the content validity of the rating schedules.

Criterion-related Validity

Criterion-related validity studies will be conducted for rating schedules of occupations that have a large number of incumbents or for occupations where a large number of hires are anticipated. The first of these studies will be conducted in late 1995. Additional studies will be conducted on an ongoing basis. The approach for these studies will be similar to the approach used to validate the ACWA examination (see Diané & MacLane, 1994; Pollack & Paskey, 1993; Reilly, 1993a; Reilly, 1993b; Reilly, Nester, McGilvray, & Kelly, 1991). For occupations where small number of hires are the norm, an alternative validation strategy will be used. This strategy will involve validating each competency across occupations rather than assessing the validity of the rating schedule as a whole for a particular occupation.

First, a study of the technical feasibility of conducting such studies will be completed (see Anderson, 1988). Once the feasibility of the study is established, applicants or current incumbents will be asked to complete the rating schedule for a particular ACWA occupation. Scores on the rating schedule will be correlated with various performance measures, including supervisory performance evaluations, job knowledge tests, and/or work samples. The criterion measures will be developed to cover both cognitive and noncognitive performance dimensions to accommodate the range of competencies being assessed by the ACWA selection procedures. Because the dimensions included on the rating schedules are based on a thorough occupational

analysis, OPM anticipates that the correlations between rating schedule scores and performance in training or on the job will be significant. Fairness analyses will also be conducted at this time.

Construct Validity

While the construct foundation of cognitive ability tests is well established (Northrop, 1989), no systematic research has been conducted to establish the construct validity of rating schedules and the attributes measured by them. The development of the rating schedules for the ACWA occupations provides us with a unique opportunity to establish evidence concerning the construct validity of dimensions commonly assessed with rating schedules.

In the employment context, construct validity has traditionally been demonstrated by identifying (through duty-ability linkage in occupational analysis) the abilities that are necessary for successful performance on the job. Once these abilities are identified, measures of such abilities are chosen or developed. Next, evidence is advanced that the measures chosen or developed are indeed measures of the identified job-relevant abilities.

In the case of the ACWA examination, over six decades of psychometric and cognitive research support the psychometric viability of the fundamental abilities measured by the examination (see Northrop, 1989). Such evidence is lacking for many of the attributes measured by traditional rating schedules, even though they are one of the most frequently used selection devices in the Federal Government.

We propose to do a series of studies, similar to those undertaken in the construct validation of the IAR (see Gandy et al., 1994). Construct validity will be assessed through the use of marker tests which have known psychometric properties. We will hypothesize the relationship between the attributes measured in the rating schedules and the marker tests, and then conduct empirical studies to support or refute these hypotheses. The content and criterion-related validity studies discussed earlier will provide additional construct validity evidence.

SUMMARY

These new ACWA hiring procedures provide agencies with another option for hiring at the entry level for professional and administrative occupations. They also allow agencies to assess competencies that are not currently assessed by the ACWA examination (such as interpersonal skills, oral communication, customer service). Because the rating schedules had to be automated, an innovative approach was used to develop training and experience items that could be answered on a scannable answer sheet. The automated format reduces the burden on both the applicants, who do not have to provide lengthy written accounts of their training and experience, and personnel specialists, who do not have to manually rate and rank applicants.

REFERENCES

Alpha Software Corporation (1993). *Alpha Four*. Burlington, MA: Author.

Anderson, C.H. (1988). *Some issues in determining the technical feasibility of criterion-related validity studies*. Washington, DC: U.S. Office of Personnel Management, Office of Personnel Research and Development.

Arvey, R.D., Nutting, S.M., & Landon, T.E. (1992). Validation strategies for physical ability testing in police and fire settings. *Public Personnel Management*, *21*, 301-312.

Diané, C., & MacLane, C.N. (1994). *Criterion-related validity of the Administrative Careers with America group 5 examinations for Social Security Administration claims representatives*. Washington, DC: U.S. Office of Personnel Management, Office of Personnel Research and Development.

Dye, D.A. (1990). *Construct validity of the Individual Achievement Record: Phase I - Development of a confirmatory factor model* (PRD-91-03). Washington, DC: U.S. Office of Personnel Management, Office of Personnel Research and Development.

Federal Register (1978). *Uniform Guidelines on Employee Selection Procedures*, *43*(166), pp. 38295-38309.

Gandy, J.A., Dye, D.A., & MacLane, C.N. (1994). Federal government selection. In G. Stokes, M. Mumford, & W. Owens (Eds.), *Biodata handbook: Theory, research, and use of biographical information for selection and performance prediction* (pp. 275-309). Palo Alto, CA: Consulting Psychological Press.

Gandy, J.A., Outerbridge, A.N., Sharf, J.C., & Dye, D.A. (1989). *Development and initial validation of the Individual Achievement Record (IAR)* (PRD-90-01). Washington, DC: U.S. Office of Personnel Management, Office of Personnel Research and Development.

Gregory, D.J., Armitage, M.A., Corts, D.B., & Park, R.K. (1992). *Occupational Study of Federal Executives, Managers, and Supervisors: Agency Summary Report, Small Agency Council Members*. (Report No. PRD-92-18-13). Washington, DC: U.S. Office of Personnel Management.

Hough, L.M. (1984). Development and validation of the "Accomplishment Record" method of selecting and promoting professionals. *Journal of Applied Psychology*, *69*, 135-146.

Landy, F. J. (1986). Stamp collecting versus science: validation as hypothesis testing. *American Psychologist*, *41*, 1183-1192.

Mabe, P.A., & West, S.G. (1981). Validity of self-evaluation of ability: A review and meta-analysis. *Journal of Applied Psychology*, *6*, 280-296.

MacLane, C.N. (1991). *Development and validation of a Civil Service quality profile* (PRD-92-02). Washington, DC: U.S. Office of Personnel Management, Office of Examination Development.

McDaniel, M.A., Schmidt, F.L., & Hunter, J.H. (1988). A meta-analysis of the validity of methods for rating training and experience in personnel selection. *Personnel Psychology*, *41*, 283-312.

Northrop, L.C. (1989). *The psychometric history of selected ability constructs*. Washington, DC: Office of Personnel Management, Office of Personnel Research and Development.

O'Leary, B.S., Rheinstein, J., & McCauley, D.E. (1991). *Job Analysis for Examination Development in Professional and Administrative Occupations* (Vol. 1; Report No. PRD-92-07). Washington, DC: Office of Personnel Management.

Pollack, D. M., & Paskey, E. M. (1993). *Criterion-related validity of the Administrative Careers with America (ACWA) Group 5 Examination for Tax Auditors* (Report No. PRD-93-14). Washington, DC: U.S. Office of Personnel Management, Office of Personnel Research and Development.

Reilly, S.M. (1993a). *Criterion-related validity of the Administrative Careers with America (ACWA) examination for Group 6 occupations using the predictive model: Prediction of training for customs inspectors (GS-1890)*. Washington, DC: U.S. Office of Personnel Management, Office of Personnel Research and Development.

Reilly, S.M. (1993b). *Criterion-related validity of the Administrative Careers with America (ACWA) examination for Group 6 occupations using the predictive model: Prediction of training for customs inspectors (GS-1816)*. Washington, DC: U.S. Office of Personnel Management, Office of Personnel Research and Development.

Reilly, S.M., Nester, M.A., McGilvray, B.E., & Kelly, K.L. (1991). *Criterion-related validity of the Administrative Careers with America (ACWA) examination for groups 3 and 4 using the concurrent model* (PRD-91-10). Washington, DC: U.S. Office of Personnel Management, Office of Personnel Research and Development.

Rodriguez, D.A., Usala, P.D., & Shoun, S. (in progress). Occupational analysis of Federal clerical and technical occupations: An application of the Multipurpose Systems Analysis Inventory--Closed-Ended (MOSAIC). Washington, DC: U.S. Office of Personnel Management, Personnel Research and Development Center.

Rothstein, H.H., Schmidt, F.L., Erwin, F.W., Owens, W.A., & Sparks, C.P. (1990). Biographical data in employment selections: Can validities be made generalizable? *Journal of Applied Psychology*, *75*, 175-184.

SCANS Report for America 2000 (1992). *Learning a Living: A Blueprint for High Performance*. U.S. Department of Labor. Washington, D.C.: U.S. Government Printing Office.

Schmidt, F.L., Caplan, J.L., Bemis, S.E., Decuir, R., Dunn, L. & Antone, L. (1979) *The behavioral consistency method of unassembled examining (TM-79-21)*. Washington, DC: U.S. Office of Personnel Management, Office of Personnel Research and Development. (NTIS No. PB 268785/AS).

Society for Industrial and Organizational Psychology, Inc. (1987). *Principles for the validation and use of personnel selection procedures (Third Edition)*. College Park, MD: Author.

Tenopyr, M.L. (1977). Content-construct confusion. *Personnel Psychology*, *30*, 47-54.

U.S. Office of Personnel Management (1992). *Occupational Study of Federal Executives, Managers, and Supervisors: An Application of the Multipurpose Occupational Systems Analysis Inventory--Closed-Ended (MOSAIC)* (Report No. PRD 92-21). Washington, DC: Author.