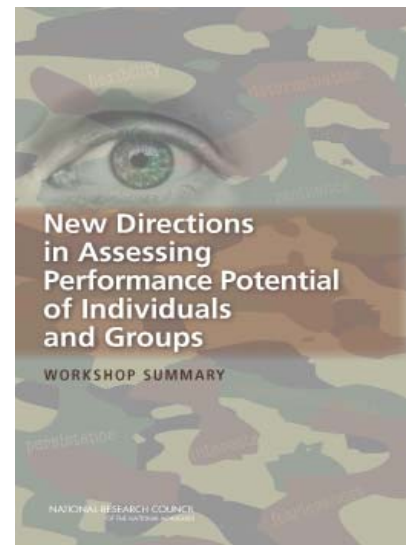


NEW DIRECTIONS IN ASSESSING PERFORMANCE POTENTIAL OF INDIVIDUALS AND GROUPS: WORKSHOP SUMMARY

As an all-volunteer service with nearly 400,000 potential recruits annually, the U.S. military must accurately and efficiently select recruits, as well as classify and assign them into jobs and units. To improve the processes whereby performance potential is assessed, the military is interested in what science can contribute to the fundamental understanding of individual differences and the combination of individual capabilities to create collective capacity to perform. In April 2013, the National Research Council, as part of its Committee on Measuring Human Capabilities: Performance Potential of Individuals and Collectives, held a workshop to explore interdisciplinary scientific approaches to individual and group assessments and to identify promising concepts for further consideration by the committee through the remainder of its study. The committee's final report will be available in early 2015.



DOMAINS AND DETERMINANTS OF PERFORMANCE

Fred Oswald of Rice University provided a general overview of considerations in employment testing, and he noted many performance *domains* relevant to job performance, such as foundational behaviors (e.g., communicating effectively), intrapersonal behaviors (e.g., persevering under pressure), and interpersonal behaviors (e.g., acting flexibly with teammates). These behaviors are shaped by *determinants* of performance, such as knowledge, skills, and motivation. To reliably predict the performance potential of an individual or group, assessments must measure those determinants of behavior that are relevant for the performance domain(s) of interest.

NEW CONSTRUCTS FOR ASSESSING INDIVIDUALS

Several workshop speakers described constructs not currently included in the military's assessments for potential recruits that may be useful in determining individual differences, individual performance potential, and the likelihood of fit within particular military occupational specialties.

- Christopher Patrick of Florida State University discussed the potential of developing measures of individual differences by combining information and insights from neurobiology with current knowledge about individual differences. He described two neurobehavioral constructs that are important to adaptive performance and may predict enhanced adaptive flexibility in threatening situations: defensive reactivity (proneness to negative emotional reactivity in the face of threat) and inhibitory control (the ability to restrain or modulate impulses).
- Michael Kane of the University of North Carolina at Greensboro discussed working memory, a complex system that includes short-term memory structures and an attention-directing component commonly termed executive attention. Both are measurable and predictive of a number of outcomes relevant to the military.
- Todd Little of the University of Kansas in Lawrence described the action-control model, which involves the relationships between an individual, a goal, and the means available for pursuing the goal. One part of this model is *agency beliefs* (such as the individual's belief that he or she has what it takes to succeed), which may predict performance. For example, people with high agency beliefs tend to persist in the face of obstacles, while those with low agency beliefs tend to feel helpless when they are challenged.

- James Rounds of the University of Illinois at Urbana-Champaign discussed the potential value in assessing individual interests as a predictor of performance. For example, a recent study examining the relative importance of interests, personality, and ability for various types of achievements showed interests were a better predictor of achievement than personality.

EMERGING UNDERSTANDINGS OF GROUP-RELATED CHARACTERISTICS

Because much work in the military involves groups, means for assessing collective capacity, as well as how individuals' characteristics might operate in a group setting, are also important to the military.

One possibility for examining collective capacity, as presented by Anita Williams Wooley of Carnegie Mellon University, is the assessment of *collective intelligence*—a product of collaboration that goes beyond what the group's members can accomplish individually and that also transcends domains—that is, groups that excel in one area are likely to excel in other areas. The collective intelligence of a team depends on factors other than the intelligence of its individual members, such as members' social perceptiveness.

Scott Tannenbaum of the Group for Organizational Effectiveness and Leslie DeChurch of the Georgia Institute of Technology discussed factors to consider in the assembly of teams. Tannenbaum suggested there may be promise in considering individuals' alignment with roles important to teams: organizer, challenger, team builder, doer, innovator, and connector. DeChurch proposed levels beyond individual factors to consider in team assembly, such as team members' individual prior relationships with one another.

NEW APPROACHES AND CAPABILITIES IN ASSESSMENT

In addition to modifying *what* is measured, assessments can also be improved by *how* they measure traits.

- Paul Sackett of the University of Minnesota, Minneapolis, discussed four approaches for improving selection systems: (1) identifying new predictor constructs, (2) improving measurements of existing predictor constructs, (3) developing a better understanding of the criterion domain, and (4) improving understanding of predictor–criterion relationships.
- Alina von Davier of ETS provided an overview of several ways the coming generation of assessments will differ from current assessments: (1) new applications, such as assessments that provide diagnostic and actionable information, (2) new types of assessment tasks, such as simulations and collaborative tasks, (3) new modes

of assessment administration, such as continuous testing, (4) changes in the stakes of assessments, and (5) changes in the types of data produced by the testing.

- Earl Hunt of the University of Washington discussed “Boring’s box,” a term derived from Edward Boring’s definition of intelligence as “what the tests test.” A century of work has produced useful cognitive models for the skills that current tests evaluate—but those are only the behaviors that “fit in the box.” He noted that there are certain abilities “that we have to find a way to evaluate if we are going to increase predictivity on the basis of cognition,” such as the ability to consider multiple perspectives on a problem. Evaluating those abilities will almost certainly require breaking Boring’s box.

ETHICAL ISSUES RELATED TO PERSONNEL ASSESSMENT AND SELECTION

Rodney Lowman of Alliant International University discussed potential ethical issues related to personnel assessment and selection. Although most professions have codes of ethics, the field of management does not—yet managers make decisions about assessment administration and interpret and act on the results. He raised several issues for consideration: For example, is feedback on assessment results an ethical right of the test taker? Is it ethically appropriate to evaluate people in the context of their fit with others?

For More Information... This brief was prepared by the Board on Behavioral, Cognitive, and Sensory Sciences based on the workshop summary *New Directions in Assessing Performance Potential of Individuals and Groups*. The workshop was sponsored by the U.S. Army Research Institute for the Behavioral and Social Sciences. The views expressed in the summary or this document reflect those of individual workshop participants and do not represent the views of all workshop participants, the committee, or the National Research Council. Copies of the workshop summary are available from the National Academies Press; (800) 624-6242; <http://www.nap.edu> or via the BBCSS webpage at www.nationalacademies.org/bbcss. Permission is granted to reproduce this document in its entirety, with no additions or alteration.

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