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Peer Review of a Report Commissioned by the Social Security Administration on Selected Occupational Requirements

Committee for a Peer Review of a Report Commissioned by the Social Security Administration on Required Mental Health Requirements for Selected Occupations

Allen Heinemann, Megan Kearney, and Carol Mason Spicer, *Editors*

Board on Health Care Services

Health and Medicine Division

A Consensus Study Report of
The National Academies of
SCIENCES • ENGINEERING • MEDICINE

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COMMITTEE FOR A PEER REVIEW OF A REPORT COMMISSIONED BY THE SOCIAL SECURITY ADMINISTRATION ON REQUIRED MENTAL HEALTH REQUIREMENTS FOR SELECTED OCCUPATIONS

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Reviewers

This Consensus Study Report was reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise. The purpose of this independent review is to provide candid and critical comments that will assist the National Academies of Sciences, Engineering, and Medicine in making each published report as sound as possible and to ensure that it meets the institutional standards for quality, objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process.

We thank the following individuals for their review of this report:

Juan I. Sanchez, Florida International University
Amanda J. Sonnega, University of Michigan
Michael A. Stoto, Georgetown University

Although the reviewers listed above provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations of this report nor did they see the final draft before its release. The review of this report was overseen by **Alfred O. Berg,** University of Washington School of Medicine. He was responsible for making certain that an independent examination of this report was carried out in accordance with the standards of the National Academies and that all review comments were carefully considered. Responsibility for the final content rests entirely with the authoring committee and the National Academies.

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Contents

ACRONYMS AND ABBREVIATIONS **xiii**

SUMMARY **1**

INTRODUCTION **3**

REVIEW OF THE ABT REPORT **7**
Objective 1, 7
Objective 2, 9
Objective 3, 14
Objective 4, 15
Reference, 17

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Boxes and Figure

BOXES

I-1 Statement of Task, 3

1 Data Sources Reviewed by Abt Associates, 8
2 Abt's Supporting Data Analysis, 10
3 Abt's Latent Factor Model, 11
4 O*NET Limitations, 12
5 Abt's Expert Meeting Process, 13
6 Expert Work Group Members, 14
7 Areas of Potential Error, 15

FIGURE

1 A visual depiction of the committee's understanding of the Abt methodology, 5

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Acronyms and Abbreviations

APDOT	Advisory Panel for the Dictionary of Occupational Titles
DOT	Dictionary of Occupational Titles
IWA	intermediate work activity
OMB	Office of Management and Budget
O*NET	Occupational Information Network
SOC	Standard Occupational Classification
SSA	Social Security Administration
SVP	specific vocational preparation

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Summary

The Social Security Administration (SSA) requested that the National Academies of Sciences, Engineering, and Medicine (the National Academies) form an ad hoc committee to conduct a peer review of a commissioned report by Abt Associates on selected occupational requirements. SSA asked Abt to assemble information on the levels of social interaction and adaption required to perform tasks in these occupations for a given specific vocational preparation (SVP) range. In response, the National Academies convened a committee of subject-matter experts with experience in epidemiology/biostatistics, economics, occupational psychology, and vocational rehabilitation. This committee carried out its peer review over the course of four months. The committee was asked specifically to consider the suitability of the databases used, the soundness of the methodology used to connect occupational tasks to social interactive and adaptive functional capacities, the appropriateness of the expertise gathered to perform the analysis, and its overall confidence in the report. The committee concluded that Abt's use of the Department of Labor's Occupational Information Network (O*NET) as the primary data source was appropriate to identify core tasks and informing its ratings. In addition, the committee concluded that the methodology and meeting process utilized by Abt were appropriate and sound, although it found a need to revisit the report multiple times and create a diagram of Abt's processes in order to better understand its approach. The committee found that inclusion of additional details in Abt's report would have been useful to its review. For example, Abt could have provided details on why it made specific methodological choices (e.g., creating a latent model that is not utilized later in the process). In addition, a glossary, a visualization of the five project phases, and detailed lists of resources exchanged among SSA, Abt, and the expert work group would have been useful to the committee's review.

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Introduction

As a result of the Office of Management and Budget's (OMB's) Final Information Quality Bulletin for Peer Review (the Bulletin), 70 FR 2664 (January 14, 2005), the Social Security Administration (SSA) requested that the National Academies of Sciences, Engineering, and Medicine convene a committee of experts to conduct a peer review of the Abt Associates' report titled *Synthesizing Information About Vocational Preparation Requirements, Occupational Tasks, and Required Functional Abilities in the Standard Occupational Classification (SOC) System*. SSA commissioned Abt to develop a report to provide data about occupational requirements for mental functioning, specifically around adaptability and social interaction, in the modern workforce. These data cover a gap in the Occupational Requirements Survey that is being used to create the Occupational Information System, which will replace the Dictionary of Occupational Titles (DOT) in SSA's disability determination processes. These efforts are part of the Vocational Rules Modernization initiative to update SSA's disability policies in keeping with current medical practice, technological advancements, and the contemporary workforce.

The National Academies committee, which carried out the peer review of the Abt report over the course of four months, included experts from the fields of epidemiology/biostatistics, economics, occupational psychology, and vocational rehabilitation. The committee met three times virtually to evaluate Abt's methodology and selection of data in accordance with the specific questions posed by SSA in the Statement of Task (see Box I-1). Per the instructions from SSA, the committee evaluated the methodology used by Abt but not its findings or conclusions. During its meetings, the committee focused on providing concrete examples from the Abt report for its answers and ensuring it had a complete picture of Abt's methodology as described in its report. The committee created a flowchart to help it visualize Abt's process (see Figure 1), while it reviewed the methods section of the report and relevant appendixes.

BOX I-1
Statement of Task

The National Academies of Sciences, Engineering, and Medicine will form an ad hoc committee to review a report authored by Abt Associates, who served as contractors to the Social Security Administration (SSA). The report "Synthesizing Information About Vocational Preparation Requirements, Occupational Tasks, and Required Functional Abilities in the Standard Occupational Classification (SOC) System" provides guidance to SSA on the mental health requirements for specific occupations.

SSA requests an evaluation of its contractor's methodology and selection of data used in accordance with the specific questions below, and to provide responsive findings

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and conclusions to SSA. The scope of the review is limited to the following questions:

1. Suitability of the database(s) utilized

Abt used the Department of Labor's Occupational Information Network (O*NET) database to inform its ratings on social interactive and adaptive functional capacities.

- Was this an appropriate data source to use to identify occupations' core tasks?
- Was this an appropriate data source to use to inform the ratings?
- Were there other data sources that would be better to inform the ratings?

2. Soundness of the methodology to connect occupational tasks to social interactive and adaptive functional capacities

Abt used the judgment of a panel of experts that it assembled for this purpose and statistical analysis of O*NET data to connect tasks to specific vocational preparation (SVP) levels, social interaction, and adaptability.

- Did Abt provide the expert work group with sufficient guidance and information to complete its task?
- Did the expert work group use the O*NET data constructs appropriately and in a manner consistent with the limitations of the data?
- Was Abt's process for obtaining consensus ratings appropriate?
- Was Abt's meeting process effective to provide ratings?
- Considering the instructions and guidance provided by SSA, did Abt's methodology provide a sufficient nexus to its findings?

3. Appropriateness of the expertise gathered to perform the analyses

The expert work group deliberated upon the mental requirements of occupations.

- Did the composition of the expert work group include appropriate expertise?

4. Overall confidence

- Were there any likely sources of bias or systematic error resulting from the data or methodology?
- Was it clear how Abt and the expert work group reached its conclusions?
- Did Abt present its methodologies clearly?

In accordance with OMB guidelines, reviewers shall limit their advice to an evaluation of the soundness of the methodologies Abt used to select appropriate O*NET data and to derive its ratings. The reviewers shall also evaluate whether the report identifies and characterizes any pertinent uncertainties in its ratings.

Reviewers shall not replicate or evaluate individual ratings.

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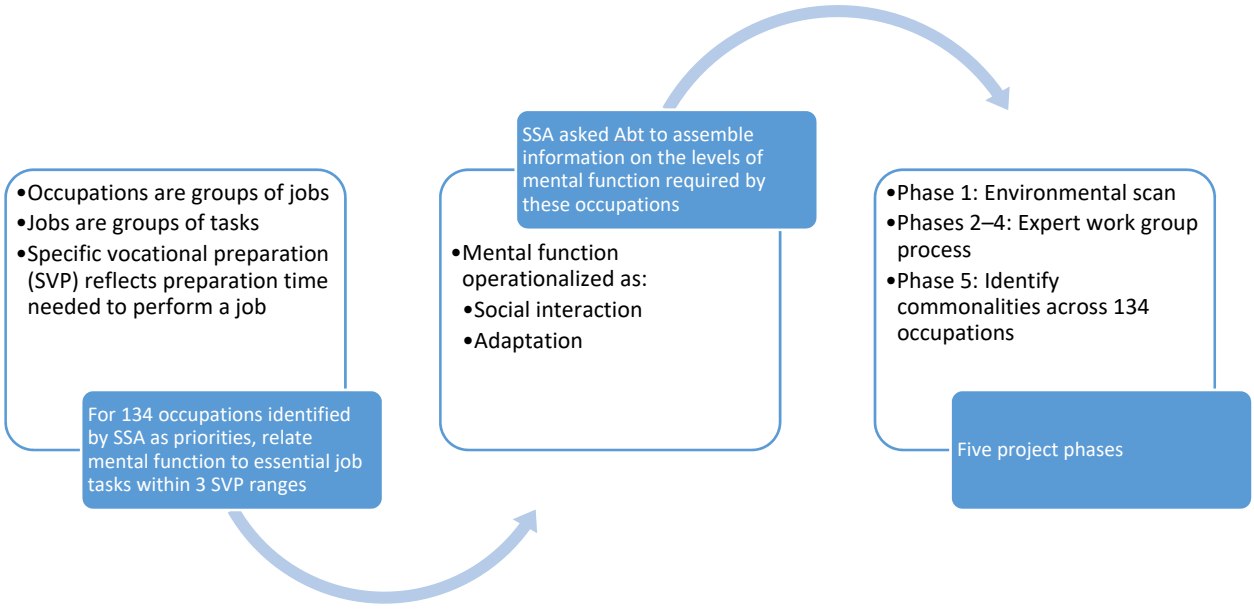

FIGURE 1 A visual depiction of the committee's understanding of the Abt methodology.

Abt was tasked with relating mental function to essential job tasks within three specific vocational preparation (SVP) ranges for 134 occupations that were identified as priorities by SSA. *Occupations* were defined as groups of jobs that were aggregated using SOC codes (Abt Associates, 2020, p. 2). *Jobs* were defined as groups of tasks and work activities that individuals perform for employers in exchange for a wage (Abt Associates, 2020, p. 2). SSA asked Abt to assemble information on the levels of social interaction and adaption required to perform tasks in these occupations for a given SVP range. Abt conducted the project in five phases. Phase 1 comprised an environmental scan to identify the primary data source to be used to identify occupations' core tasks and inform the ratings. Phases 2–4 involved the expert work group process for creating the occupational requirement ratings. In Phase 5, Abt analyzed all 134 SOC codes to identify commonalities across essential tasks and required functional abilities.

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Review of the Abt Report

The committee's review of the Abt report is organized around the four objectives listed in the Statement of Task: (1) suitability of the database(s) utilized, (2) soundness of the methodology to connect occupational tasks to social interactive and adaptive functional capacities, (3) appropriateness of the expertise gathered to perform the analyses, and (4) overall confidence in the report. Each objective is restated in a box at the start of the corresponding section of the committee's review.

OBJECTIVE 1

1. Suitability of the database(s) utilized

   Abt used the Department of Labor's Occupational Information Network (O*NET) database to inform its ratings on social interactive and adaptive functional capacities.

   1.1 Was this an appropriate data source to use to identify occupations' core tasks?
   1.2 Was this an appropriate data source to use to inform the ratings?
   1.3 Were there other data sources that would be better to inform the ratings?

In Phase 1 of its work, Abt conducted an environmental scan to determine the most appropriate extant data source to inform its ratings of social interactive and adaptive functional capacities in relationship to essential job tasks and specific vocational preparation (SVP) requirements of 134 occupations in the national economy. The data sources considered were nationally representative and ideally would include (1) measures of required tasks and functional capacity of occupations and (2) related Standard Occupational Classification (SOC) codes and SVP ratings for the 134 specific occupations specified by the Social Security Administration (SSA) (see Abt Associates, 2020, p. 7). Ultimately Abt decided to use the Department of Labor's Occupational Information Network (O*NET) database because none of the other data sources included sufficient detail on required tasks or required functional capacity for a given occupation. O*NET is the nation's contemporary and most comprehensive source of occupational information. The O*NET database, contains standardized and occupation-specific descriptors of nearly 1,000 occupations across the U.S. economy. The database[1] is periodically updated from a broad range of workers in each occupation.

[1] See https://www.onetcenter.org/overview.html (accessed November 5, 2020).

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Peer Review of a Report Commissioned by the Social Security Administration on Selected Occupational Requirements

1.1–1.2 Was O*NET an appropriate data source to use to identify occupations' core tasks and to inform the ratings?

Based on its familiarity with the national surveys reviewed by Abt (see Box 1), the committee agreed with the conclusion that O*NET was an appropriate database to use to identify core tasks of occupations and inform the SVP ratings because it is the only nationally representative, modern data source with sufficient detail to address the objectives articulated by SSA. In particular, it was the only data source reviewed that included task specificity and functional requirements of occupations coded by SOC.

BOX 1
Data Sources Reviewed by Abt Associates

"First, we reviewed data documentation for the eight specific datasets listed … to determine how well each dataset fits these requirements. We consulted with SSA on additional datasets to review, and removed other datasets as SSA recommended doing so." (Abt Associates, 2020, p. 7)

1. American Community Survey (ACS)
2. Current Population Survey (CPS)
3. Survey of Income and Program Participation (SIPP)
4. Health and Retirement Study (HRS)
5. Panel Study of Income Dynamics (PSID)
6. National Health Interview Survey (NHIS)
7. RAND American Life Panel
8. O*NET Data Collection Program

However, the committee had questions about how Abt conducted the environmental scan and the criteria Abt used for the selection of data sources. The committee was not able to discern how Abt identified data sources for potential consideration, how it optimized inclusion of all possible viable data sources, and how it addressed potential selection bias. Aside from the criteria mentioned previously, there is little detail provided about why Abt selected the eight potential data sources listed in Exhibit 2-1 of the Abt report (Abt Associates, 2020, p. 7; see also Box 1), whether any potential data sources were excluded, and if so, the rationale for exclusion. A clearer and more comprehensive description of this process would have been helpful.

1.3 Were there other data sources that would be better to inform the ratings?

The O*NET does have limitations. Specifically, it does not map tasks to SVP levels, nor does it relate tasks to the functional requirements of those tasks. Furthermore, it uses generalized and specific work activities to summarize tasks performed across more than one occupation. Thus, in some cases, task descriptions may not be sufficiently specific to an organization. The O*NET also does not include ratings of adaptation and social interaction, the specific functional requirements of interest to SSA. However, the committee is not aware of any other dataset that would better inform the ratings.

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OBJECTIVE 2

2. Soundness of the methodology to connect occupational tasks to social interactive and adaptive functional capacities

   Abt used the judgment of a panel of experts that it assembled for this purpose and statistical analysis of O*NET data to connect tasks to specific vocational preparation (SVP) levels, social interaction, and adaptability.

   2.1 Did Abt provide the expert work group with sufficient guidance and information to complete its task? Was this an appropriate data source to use to inform the ratings?
   2.2 Did the expert work group use the O*NET data constructs appropriately and in a manner consistent with the limitations of the data?
   2.3 Was Abt's process for obtaining consensus ratings appropriate?
   2.4 Was Abt's meeting process effective to provide ratings?
   2.5 Considering the instructions and guidance provided by SSA, did Abt's methodology provide a sufficient nexus to its findings?

In Phases 2–4, Abt worked with a panel of experts (working group) that it assembled to generate ratings of social interaction and adaptability requirements for occupations within a given SVP range (see Box 2). Abt developed and provided the expert work group with the following information:

1. A list of tasks in each occupation, their importance, and the distribution of the required frequency for these tasks,
2. SVPs for each occupation,
3. Summary of the latent modeling results (see Box 3), and
4. Guidance documents from SSA

The Abt analytic staff assigned tasks in each occupation to a level of SVP, and for each SVP it rated the frequency of required work interactions (e.g., basic, verbal, with general public). Tasks were then rated for functional capacity for adaptation and four areas of social interaction (as defined by SSA) by the expert working group (see Box 2). These ratings were then rolled up to occupational level. Abt carried out this work over the course of nine meetings during which it worked with the experts to ensure continuity of the ratings process and common understanding of SSA's guidance on rating.

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BOX 2
Abt's Supporting Data Analysis

"In Phases 2–4, the Abt team used the identified O*NET data to crosswalk essential task descriptions to SVP ranges and associate essential tasks for each SOC with ratings of adaptability and social interaction. The O*NET data does not map tasks to SVP levels, nor to required abilities or skills, so we convened an expert work group to associate tasks to SVP levels, and rate each occupation by SVP level according to five dimensions of required social interaction and adaptation." (Abt Associates, 2020, p. vii)

"We first conducted an analysis of O*NET data to determine the core tasks of each occupation as identified by SOC code, their frequency required for the occupation, and associated work activities, skills and/or abilities, including the range of estimates. This analysis informed the work of the expert work group. We associated work activities, skills and/or abilities with tasks in order to construct a measure of adaptability required for each task listed for each occupation. This process is described in Section 3." (Abt Associates, 2020, p. vii)

"We convened an expert work group for the initial meeting in November 2019 and met additional times to reach consensus on ratings for tasks and occupations (with group members working independently before each meeting). In the meetings, the expert work group assigned tasks in each occupation to a level of specific vocational preparation, rated tasks by required functional capacity, then determined the minimum required functional capacity for the occupation across Adaptation, Basic Work Interactions, Verbal Work Interactions, More than Basic Work Interactions, and Interaction with the General Public based on the minimum required functional capacity across tasks." (Abt Associates, 2020, p. 5)

2.1 Did Abt provide the expert work group with sufficient guidance and information to complete its task? Was this an appropriate data source to use to inform the ratings?

It is clear that Abt's data preparation was thorough, but there is a lack of detail about how the information provided to the experts by Abt may have influenced the expert group's ratings (see Box 2). Appendix D of the Abt report focuses on the definitions of terms provided to the expert work group (e.g., social interaction and adaptability) and summarizes the guidance provided by SSA to Abt that was used to inform the deliberations of the expert panel. It would have been helpful, however, to include an example of one of the worksheets that the Abt analytic team prepared that provided the "main touch point to guide discussion" (Abt Associates, 2020, p. 13). Reported results focus on the ratings of the expert panel and the process used to generate these ratings. However, the report does not describe how the results of the alternative approach, i.e., the latent factor modeling (see Box 3), compared to the expert group's ratings. Since considerable work was devoted to the latent factor model, it would have been informative to understand how the modeling results compared with those of the panel to provide support for the panel's ratings or to highlight weaknesses in either of the approaches. In the end, the expert group did not appear to rely on the modeling results as part of its process, so the purpose that was served by the modeling is unclear. The report states that the experts did not rely on the latent factor modeling results, but rather used the descriptive information on tasks to form their own expert opinions.

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BOX 3
Abt's Latent Factor Model

"We estimated a latent factor model (akin to a principal component or factor analysis, but allowing proper subsets of traits, as would be the case with a test booklet used to measure achievement where each student has a proper subset of all possible questions) using these eight attributes of occupations to tie a latent factor called Adaptation to tasks (that is, we can predict the latent factor by task, by occupation).

Some of these [intermediate work activities] are tied to mental functional capacity, and we used four identified in consultation with SSA as related to adaptation, to measure a latent construct called Adaptation:

- Making Decisions and Solving Problems (Analyzing information and evaluating results to choose the best solution and solve problems.) This seems clearly tied to the level of judgment or decision making the individual can handle during the course of a normal workday, but also relates to handling novel situations or change.
- Judging the Qualities of Things, Services, or People (Assessing the value, importance, or quality of things or people.) This seems tied to the level of judgment or decision making the individual can handle during the course of a normal workday.
- Developing Objectives and Strategies (Establishing long-range objectives and specifying the strategies and actions to achieve them.)
- Organizing, Planning, and Prioritizing Work (Developing specific goals and plans to prioritize, organize, and accomplish your work.) This seems tied to the level of judgment or decision making the individual can handle during the course of a normal workday.

Under the heading of *skills*, the *social skill* of **Coordination** (Adjusting actions in relation to others' actions) was identified as most closely tied to Adaptation, in the sense that the skill is tied to handling novel situations or change. Under the heading of *abilities*, there are three *cognitive abilities* that SSA identified as tied to adaptation:

- **Category Flexibility** (The ability to generate or use different sets of rules for combining or grouping things in different ways.) This seems tied to the level of judgment or decision making the individual can handle during the course of a normal workday.
- **Problem Sensitivity** (The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.) This seems clearly tied to the level of judgment or decision making the individual can handle during the course of a normal workday, but also relates to handling novel situations or change.
- **Speed of Closure** (The ability to quickly make sense of, combine, and organize information into meaningful patterns.) This seems tied to the level of judgment or decision making the individual can handle during the course of a normal workday, but also relates to handling novel situations or change." (Abt Associates, 2020, pp. 10–11)

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Despite these concerns, the committee determined Abt's data preparation process to be sound and thorough. The materials it created were useful to inform the expert panel, even if the expert work group did not rely on them heavily in some instances. Examples include core task identification (Abt Associates, 2020, p. 8, Exhibit 3-1), task frequency (Abt Associates, 2020, p. 9, Exhibit 3-2) and SVP/occupation grouping (Abt Associates, 2020, p. 10).

2.2 Did the expert work group use the O*NET data constructs appropriately and in a manner consistent with the limitations of the data?

The committee agreed that the expert work group used the O*NET data constructs appropriately and in a manner consistent with the limitations of the data. In particular, the O*NET does not map tasks to SVP levels, nor does it relate tasks to the associated functional requirements of those tasks (see Box 4). Therefore, Abt needed to create initial linkages to inform the remaining linkages which required judgment by content experts. For instance, Abt assembled information on essential tasks in each occupation, SVPs for each occupation, and ratings for each occupation for each of three SVP ranges on five categories of mental function. Then, the expert panelists rated required frequency of interactions across jobs, rated tasks by functional capacity, and determined the minimum functional capacity for jobs and occupations. The narrative description of this work, which begins on page 13 of the Abt report, is detailed and flows logically, although an appendix with additional information in the form of a flow chart would have been useful. The experts used O*NET for a list of tasks and their frequency distribution, and these were used to make ratings.

BOX 4
O*NET Limitations

"When the Advisory Panel for the Dictionary of Occupational Titles (APDOT) delivered recommendations on March 22, 1993, for what is now the O*NET content model, it cautioned against relying solely on these data to determine the demands of jobs. Specifically, it wrote: "APDOT believes such uses are questionable, since the DOT offers composite occupational descriptions and not organization-specific job descriptions" (p. 18). We used the occupational data in O*NET to serve as information to support an expert work group's consensus recommendations, not as a guide to ratings." (Abt Associates, 2020, p. 3)

The committee had questions about why Abt chose to incorporate some aspects of O*NET and not others in its work. For example, the committee questioned whether the "abilities" descriptions from O*NET could have been used to characterize mental job requirements more thoroughly. A few of these descriptions are particularly relevant to the examination of social interaction and adaption. Thus, the committee questioned whether these descriptions could have further informed the expert panel beyond their use in the latent modeling, which ultimately was not used in the expert panel's process.

2.3–2.4 Was Abt's process for obtaining consensus ratings appropriate and was the meeting process effective to provide ratings?

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The committee agreed that Abt's process for obtaining consensus ratings, which was described in considerable detail in the report, was appropriate. A statistical model of individual ratings could have been employed to predict consensus ratings, and such evidence could have shed light on the extent to which, for instance, some members of the panel were more influential than others, or whether certain experts were more influential in specific judgments. Despite the potential limitations due to a lack of empirical checks on the consensus process, the iterative nature of the work group's approach ensured consistency through the repetition of the rating process, both during the project and in the final meetings (see Box 5). It also implemented a process for dealing with conflicting ratings, should they occur. For these same reasons, the committee concluded that Abt's overall meeting process was effective to provide the ratings.

BOX 5
Abt's Expert Meeting Process

"The first four constituted two meetings for each of two sets of SOC codes (first 10 and next 40), and members rated occupations in worksheets before and after each meeting (in one to three rounds of ratings per person). In the fourth meeting, we revisited the ratings done in the first pair of meetings on the first 10 occupations and filled in any missing ratings for each SVP level. During a fifth meeting, covering all of the first fifty SOC codes in Exhibit 5-1, the group revisited the frequency of work interactions to separately rate the required frequency of verbal work interactions. Our sixth and seventh meetings involved rating the next 84 occupations and their tasks, including verbal work interactions. In our eighth and ninth meetings, the expert work group revisited all 134 occupations to ensure a consistent standard was applied across all tasks and occupations." (Abt Associates, 2020, p. 13)

2.5 Considering the instructions and guidance provided by SSA, did Abt's methodology provide a sufficient nexus to its findings?

The committee understood question 2.5 to mean: *Considering the guidance provided by SSA, did Abt apply sound methods that addressed SSA's objectives and supported the study findings?*

Based on the detailed instructions and guidance from SSA, the committee concluded that Abt's methodology was step-wise and systematic, addressed the stated objectives, and supported the study findings. First, Abt identified an appropriate data source for the study, although some relevant details about the environmental scan were not provided in the report. Next, it prepared a substantial amount of data in advance of the expert committee meetings to inform the work group's deliberation process. For instance, core tasks for each of the 134 specified occupations were rated by importance and relevance. The frequency with which core tasks were performed was identified. SVPs were collapsed and each occupation was rated for each of three SVP ranges on five categories of mental function (reflecting adaptation and work interactions). Complex statistical modeling was performed to characterize the latent trait of "Adaptation" and tie it to job tasks. All of these materials were summarized in tables and provided to the expert panel to inform its ability to (1) assign tasks in each occupation to a level of SVP, (2) rate the frequency of required work interactions, (3) rate the five aspects of mental functional capacity as defined by SSA, (4) determine the minimum required functional capacity for each occupation across these categories, and (5) collapse these rating to the occupational level. The materials in Appendix D

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of the Abt report operationalize SSA's thinking about interactive and adaptive aspects of work demands. Abt's data preparation process is reflected, in part, in Exhibits 3-1 and 3-2 of the Abt report (Abt Associates, 2020, pp. 8–9). The work of the expert panel is, in part, reflected in Appendix B, Exhibit 5-1 (Abt Associates, 2020, pp. 21–37), Appendix A, and Exhibit 5-2 of the Abt Report (Abt Associates, 2020, pp. 38–47).

OBJECTIVE 3

3. Appropriateness of the expertise gathered to perform the analyses

   The expert work group deliberated upon the mental requirements of occupations.

   3.1 Did the composition of the expert work group include appropriate expertise?

The expert work group recruited by Abt (see Box 6) included eight work group members whose backgrounds included vocational rehabilitation, nursing, labor economics, psychology, physical therapy, and occupational therapy. In addition to the expert work group members, two advisory group members joined the first five meetings to contribute to the initial ratings of tasks and mapping them to occupational requirements. These advisory group members had backgrounds in vocational and psychiatric rehabilitation.

3.1 Did the composition of the expert work group include appropriate expertise?

The committee agreed that the list of experts compiled by Abt (see Box 6) included the appropriate expertise for the report.

BOX 6
Expert Work Group Members

Name	Role on Work Group
Austin Nichols, PhD	Abt analytic staff
Andrew Clarkwest, PhD	Abt analytic staff
Sarah Prenovitz, PhD	Abt analytic staff
Nida Corry, PhD	Psychologist
Elizabeth Marfeo, PhD	Occupational Analyst
Therese Rodda, PT, MBA	Medical Researcher
Olga Ehrlich, PhD, RN, CHPN	Medical Researcher
Amy Armstrong, PhD	Lead Researcher
Stacy Davis, LCSW	Vocational Rehabilitation Specialist
Susan Gatti, MA, CRC	Vocational Rehabilitation Specialist

The expert group included individuals with backgrounds in nursing, occupational therapy, physical therapy, rehabilitation counseling, and social work, reflecting professions with expertise in function, occupational requirements, and their intersection. The committee noted that physicians were not included on the expert panel. Because physicians in occupational medicine specifically evaluate injury and its impact on function in relationship to work requirements, the

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inclusion of a representative with this disciplinary expertise may have added to the panel's composition. The committee concluded that there were no additional highly relevant professional fields that should be included.

OBJECTIVE 4

4. Overall Confidence

   4.1 Were there any likely sources of bias or systematic error resulting from the data or methodology?
   4.2 Was it clear how Abt and the expert work group reached its conclusions?
   4.3 Did Abt present its methodologies clearly?

4.1 Were there any likely sources of bias or systematic error resulting from the data or methodology?

The committee defined *bias* as a systematic error leading to an incorrect estimate of effect or association, and *systematic error* as an inaccuracy in a measurement or system that is not introduced by chance. The committee concluded that the Abt report does not demonstrate any apparent sources of systematic bias or error. It acknowledged sources of potential error such as the data aggregation methods (see Box 7) and that the ratings of core tasks are not entirely straightforward (Abt Associates, 2020, p. 16). In addition the absence of reliability and validity checks in the consensus methodology could have contributed to potential error, but the committee concluded that any potential errors introduced by these issues are unlikely to be systematic. Additional examples of potential sources of error would have helped enhance confidence in the committee's assessment of this issue.

BOX 7
Areas of Potential Error

"Even once all of the core tasks in an occupation have ratings, applying a rating to an occupation is not straightforward. In general, aggregating from tasks to the jobs in given SVP ranges in occupations requires a subtle expert judgment about the required average frequency of interaction for the job as a whole, so even if each task had a numerical required frequency attached, the sum of those numbers would not necessarily equal the occupational requirement." (Abt Associates, 2020, p. 16)

4.2 Was it clear how Abt and the expert work group reached its conclusions?

The committee agreed the report was clear about the way in which Abt and the expert work group reached their conclusions. Section 4, *Narrative of Expert Work Group Process* (Abt Associates, 2020, pp. 13–20), describes in detail how the work group reached its consensus, and the approach seems reasonable.

4.3 Did Abt present its methodologies clearly?

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In terms of Abt's overall methodology, the committee concluded that while the approach was sound, it could have been presented more clearly in the report. For instance, the report used different terms interchangeably, such as *required functional abilities, mental function,* and *functional capacity*, when referring to social interaction and adaptation, which is how these concepts were operationalized for the purpose of this study. Similarly, the terms *core tasks* and *essential tasks* were used interchangeably. This made it difficult to follow the logic of the workflow without re-reading the report several times.

In addition, although it is clear that SSA specified many of the parameters of this study, it would have been helpful for Abt to have articulated the rationale for these parameters, such as the need to collapse SVP categories and then link them to essential job tasks. Similarly, articulation of the rationale for operationalizing mental function by the five variables noted in the report (i.e., 1. whether adaptation was required, 2. whether complex work interactions were required or not, 3. if so, how frequently, 4. the frequency of verbal work interactions, and 5. the nature of interactions with the public) would have been helpful since it significantly narrows the concept of mental function applied to this study.

A flow chart or graphic depicting the essential study tasks would have helped clarify the study process, particularly in how ratings were assigned. Inclusion in the report of the materials that the expert work group were given would have helped facilitate the readers' understanding of Phases 2–4. Additional detail would have been useful in the description of Phase 1, in particular the various crosswalks that were conducted to inform the expert panel.

Finally, details about how the latent modeling was conducted were not clear and the results were not presented or interpreted by Abt. The description of the latent model made it difficult to understand how those results informed the study, particularly because the expert group did not seem to utilize the modeling in its work. Additional appendices expanding on the latent model and environmental scan would have been useful, so that these aspects of the process could be understood better. Inclusion of terminology definitions (a glossary) would have allowed faster and more accurate assimilation of the report. The committee noted that O*NET is complex so the process of linking elements is complex, and Abt likely optimized this process.

Overall, the committee concluded that Abt utilized the most appropriate data resources available and selected an expert work group with necessary and relevant expertise. In addition, while the committee noted that further explanation and details would have been helpful, the committee concluded that both the methodology and meeting process Abt used were rigorous and sound.

REFERENCE

Abt Associates. 2020. *Synthesizing information about vocational preparation requirements, occupational tasks, and required functional abilities in the Standard Occupational Classification (SOC) System: Final report*. Rockville, MD.

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