

WorkKeys[®]



FIT ASSESSMENT

User and Technical Guide



ACT[®]

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1 Introduction

Overview

Organizations invest heavily in their employees, and return on that investment depends on having people with the skills required to perform their jobs well. But human resources professionals recognize that so-called “hard skills,” while essential to employee performance, are only one piece of the puzzle. Employees who have the ability to do the work may still be underproductive if they do not find the work personally rewarding. It is commonly known that employees who find their work personally rewarding are more likely to engage in positive organizational behavior. Such employees tend to receive more praise and higher performance ratings, contributing to satisfaction, productivity, and organizational commitment.

Meeting organizational goals means more than just hiring the right people. Managing staff also involves responsibilities such as job placement and leadership development. All of these duties involve finding individuals who are right for a particular occupation—individuals who are likely to find the work tasks and work setting rewarding. But how do you identify individuals and occupations that fit together well?

ACT, a leader in test development and assessment for almost 50 years, has added a suite of powerful personal skills tools to the WorkKeys® line of assessments to assist employers with critical personnel decisions. One of these tools is the WorkKeys Fit Assessment, which provides employers with a quick and cost-efficient way to obtain information on the fit between an examinee’s interests and values and existing occupations within an organization. Results can be used to inform resource management decisions and to help achieve goals to optimize occupational transitions in an organization. For example, the Fit Assessment can assist with:

- Assessing and developing fit within the organization
- Identifying prospective jobs for which an employee shows good fit
- Planning for reassignment within the organization
- Identifying employees who meet future company needs
- Helping employees make informed career decisions

What Is Testing for Fit?

Visit a variety of work settings and you will see one of the basic tenets of most major career theories: workers tend to gravitate to occupations that are in harmony with their personal characteristics. For example, persons with interpersonal skills, who enjoy talking to others and working indoors, and who value opportunities to influence others, are likely to be found in sales jobs—not in construction. Sales occupations afford such persons more opportunities to engage in activities that are personally rewarding, and provide a better match for their skills, interests, and values. We can say that sales occupations *fit* these persons better than construction occupations.

Testing for fit is a way to facilitate the movement of workers to environments they are likely to find personally rewarding. Testing for fit typically involves comparing noncognitive characteristics of a person (e.g., work values) to the characteristics of an occupation (e.g., settings, tasks).

A measure of fit can be obtained whenever both personal and occupational information, obtained on corresponding characteristics, is available. Fit can range from low to high, and refers to the degree to which the characteristics of the person and occupation agree with each other.

Fit can be defined in several ways, depending on the aspects of the workplace the person is being compared to. The aspects of the workplace can range from narrow to broad. *Person-job* fit refers to the fit between the person and the specific tasks performed at a particular work setting. *Person-occupation* fit refers to the fit between the person and the work tasks typically associated with jobs in an identifiable occupation. *Person-organization* fit refers to the fit between the person and aspects of the entire organization.

Since jobs can vary considerably across settings, assessments designed to measure them can be complex and impractical. In contrast, occupations display more consistency across settings. For this reason, the WorkKeys Fit Assessment measures person-occupation fit. The assessment efficiently assesses fit for all 949 occupations from the O*NET database, the nation's most comprehensive source of occupational information.

Fit benefits everyone. For employers, the WorkKeys Fit Assessment helps identify persons whose interests and values fit the characteristics of an occupation. Such persons are more likely to become productive and committed employees. For job applicants and current employees, the WorkKeys Fit Assessment helps identify occupations that permit them to fulfill their interests and values. Employees who fit their work environment are more likely to have satisfying and rewarding careers.

History and Prevalence of Fit Assessment

Efforts to apply person-environment fit to workforce needs can be traced back to the 1920s, when interest inventory results first began to be based on the agreement between the measured interests of individuals and the measured interests of people in various occupations. In the 1960s there were systematic and extended efforts to apply the idea of fit to workers and work values (Lofquist & Dawis, 1969). The use of fit has been accelerating since the mid 1980s, as more researchers and employers focus on the impact of fit for worker satisfaction, organizational commitment, and the social/interpersonal aspects of job performance (Erdheim, Zickar, & Yankelevich, 2007). Given the theory and research underlying person-environment fit, some have questioned why the use of fit assessments for workforce needs is not more widespread than it is (Ployhart, Schneider, & Schmitt, 2006).

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About the WorkKeys Fit Assessment

What Is the WorkKeys Fit Assessment?

The WorkKeys Fit Assessment compares the self-reported activity preferences (interests) and work values of examinees to the corresponding activities and characteristics of occupations. The assessment is easily and quickly administered, either on-site or through the services of independent testing sites. Scoring and reporting is instantaneous, providing fit scores for specified occupations that can be used to inform resource management decisions. The report also lists occupations (and their fit scores) *related* to the specified occupations, as well as occupations receiving the highest fit scores. All occupations are drawn from the diverse set of 949 occupations in the current O*NET database (National Center for O*NET Development, 2006). In addition, the report contains summary information on the individual's highest and lowest measured interests and values.

Decision Making Based on the WorkKeys Fit Assessment

Organizations have the flexibility to determine how best to use the WorkKeys Fit Assessment to meet their diverse resource management needs and goals. As noted in Chapter 1, the assessment can help inform decisions and achieve goals to optimize occupational transitions in an organization. For example:

- Assessing and developing fit within the organization
- Identifying prospective jobs for which an employee shows good fit
- Planning for reassignment within the organization
- Identifying employees who meet future company needs
- Helping employees make informed career decisions

The results of the Fit Assessment are most beneficial when used in a “top-down” approach, that is, giving more consideration to higher scores (which indicate more fit). For transition and development purposes, these results can be considered in concert with other relevant information, such as performance evaluations. For selection purposes, results can supplement information from more traditional sources, such as foundational skills tests, job interviews, work samples, and reference checks.

Using the WorkKeys Fit Assessment: Examples

Employers can review the following case scenarios for guidance on how to use the Fit Assessment to meet their specific resource management needs.

Case 1: Planning for Reassignment Inside the Organization

Staffing needs change as organizational goals evolve, and sometimes employers need ways to identify employees for optimal reassignment within the organization. When an employee is being considered for occupations that vary from their current one, reassignment to a good-fit occupation can smooth the transition, leading to higher productivity and more satisfaction. Criteria for reassignment can be based on several factors, applied incrementally or concurrently. Here is an example of how this works:

1. First, employees are interviewed. If reassignment is optional, gauge employee openness to reassignment.
2. Employees complete the Fit Assessment.
3. High-scoring employees move to the next step. A cutoff score can be used to identify persons who score at or above the desired cutoff.
4. The remaining steps of the employer's transitioning process are conducted, such as administration of a knowledge test.
5. Employees who meet the criteria at all steps are reassigned.
6. Employees who meet only the first two criteria are offered training to prepare them for possible future reassignment.

Case 2: Helping Employees Make Informed Career Decisions

Some organizational goals are served by educating employees about careers and how to make informed career decisions. The WorkKeys Fit Assessment not only provides information on the fit between the person and occupations, it also provides results for the interest and work value components in the assessment. Learning about one's work-relevant interests and values are fundamental to gaining the self-knowledge needed to make informed career decisions. Here is an example of how this works:

1. Employees complete the Fit Assessment and tests such as WorkKeys *Applied Mathematics* and *Reading for Information*.
2. Results are discussed with employees. Salient results are reviewed: the profile of interest scores, as well as highest (and lowest) values. High-fit occupations identified by the Fit Assessment can be linked to jobs in the organization and reviewed in light of results of other assessment information, such as the *Applied Mathematics* and *Reading for Information* tests.
3. Results are discussed in the context of career decision steps, such as:
 - (a) gaining self-knowledge;
 - (b) exploring personally relevant options;
 - (c) developing goals based on self-knowledge and realistic options; and
 - (d) evaluating ways to bridge the gap between current circumstances and goals. Results can be discussed in light of the specific purpose for which the assessment was administered.

Case 3: Hiring Using Multiple Tests with Hurdles

The WorkKeys Fit Assessment can be used to supplement results in a selection system. In one such selection system, employers set up stages called hurdles. The stages are ordered so that job applicants have to pass hurdles in succession, and they are only allowed to progress to the next hurdle if they have passed the requirements of the prior hurdle. This process uses tests to progressively narrow the pool of applicants to only the most qualified. Here is an example of how this works:

1. All applicants complete the first hurdle, such as the WorkKeys Performance Assessment.
2. Only top-scoring applicants move to the second hurdle. If a cut-off score is used, only those who score at or above the desired cutoff continue to the second hurdle.
3. Applicants passing the first hurdle move to the second hurdle, such as WorkKeys *Applied Mathematics* and *Reading for Information*.
4. Only applicants who meet the cutoffs for both hurdles continue to the third hurdle.
5. Applicants passing the first two hurdles then complete an interview—the last hurdle in the selection system. The WorkKeys Fit Assessment is completed during this period, with the results supplementing the information gathered from the interview.
6. Applicants with the highest rankings from the last hurdle are hired.

Measurement Components

The WorkKeys Fit Assessment contains 102 self-report questions across two instruments: the ACT Interest Inventory and the ACT Work Values Inventory. The Fit Assessment—consisting of both instruments—requires about 10 to 15 minutes to complete. It yields an overall score, called a Fit Index, for each occupation in the system. The Fit Index is based on results from both the interest and work values inventories.

There are currently 949 occupations in the WorkKeys Fit Assessment system, corresponding to the occupations in the 2006 O*NET-SOC occupational classification system, and the O*NET 10 database (National Center for O*NET Development, 2006). The database provides expert ratings on a range of variables. The WorkKeys Fit Assessment uses O*NET 10 database interest profile ratings and values ratings to describe occupations, as explained in Chapter 3.

The Interest Inventory

The ACT Interest Inventory, first introduced in 1977, has undergone periodic enhancements over the years and was last updated in 2006. As a component of several programs, it is currently completed by over 4 million persons each year. The 84 items, written at the fifth-grade level, describe common, work-related activities that are familiar to people through participation or observation. Occupational titles and specific job duties are not used. The six scales parallel the six interest types in John Holland's well-known theory of careers (Holland, 1997), covering the full spectrum of basic work tasks. As described in the Appendix, extensive reliability and validity information is available. Descriptions of the six scales are shown in Table 1:

Table 1
Interest Inventory Scales, Descriptions, and Sample Items

Scale	Description	Sample Item
Administration & Sales	Persuading, influencing, directing, or motivating others through activities such as sales, supervision, and aspects of business management.	Conduct a meeting
Business Operations	Developing and/or maintaining accurate and orderly files, records, accounts, etc.; designing and/or following systematic procedures for performing business activities.	Figure shipping costs for catalog orders
Technical	Working with tools, instruments, and mechanical or electrical equipment. Activities include designing, building, repairing machinery, and raising crops/animals.	Assemble a cabinet from written instructions
Science & Technology	Investigating and attempting to understand phenomena in the natural sciences through reading and research.	Learn how the brain works
Arts	Expressing oneself through activities such as painting, designing, singing, dancing, and writing; artistic appreciation of such activities.	Make creative photographs
Social Service	Helping, enlightening, or serving others through activities such as teaching, counseling, and working in service-oriented organizations.	Help someone make an important decision

The inventory will appear on the computer screen like the one shown in Figure 1. The examinee will receive instructions to choose one of three answers on the scale: whether they would *Like*, *Dislike*, or are *Indifferent to* the activity in the item.

Figure 1
Sample Interest Inventory Items

	Dislike	Indifferent	Like
* 1. Conduct a meeting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 2. Calculate the interest on a loan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 3. Inspect products for defects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 4. Use a microscope or other lab equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 5. Prepare drawings to illustrate a magazine story	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 6. Help a newcomer meet people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 7. Manage a small business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 8. Set up a bookkeeping system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 9. Assemble a cabinet from written instructions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* 10. Read books or magazines about new scientific findings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The Work Values Inventory

The ACT Work Values Inventory was developed specifically for the WorkKeys Fit Assessment. It consists of 18 values commonly found in values inventories. The items are written at the sixth-grade reading level. The 18 values and definitions are:

1. **Authority:** Telling people what to do; controlling the behavior of others.
2. **Autonomy:** Making my own plans and decisions as I do my work.
3. **Compensation:** Earning a higher salary or wage than people working in other jobs.
4. **Creativity:** Creating something new or finding new ways of doing things; original thinking.
5. **Flexible Hours:** Being able to choose the hours I want to work, as long as the work gets done on time.
6. **Helping People:** Improving the lives of others by activities such as teaching, physically assisting, or mentoring.
7. **Influencing Others:** Convincing or advising people to do things, even though I have no authority over them.
8. **Intellectual Stimulation:** Thinking about difficult concepts and working to solve complex problems.
9. **Order:** Putting things in order for others; using a system or rules to arrange things.
10. **Physical Activity:** Moving around in my work by walking, bending, lifting, etc.
11. **Precision:** Being exact or very accurate in the work I do.
12. **Public Contact:** Interacting with customers (as in sales) or the public (as in police work).
13. **Social Status:** Being looked up to by others in my company or my community because of my job.
14. **Taking Risks:** Working in settings that involve risk, such as on high places or near vehicular traffic.
15. **Using My Hands:** Using my hands to skillfully control objects, tools, or machines.
16. **Variety:** Using many different skills to do my work.
17. **Working Independently:** Working separately from coworkers and supervisors for much of the day.
18. **Working Outdoors:** Working outdoors much of the time, being exposed to the weather.

The inventory will appear on the computer screen like the one shown in Figure 2. The examinee will receive instructions to choose one of five answers on the scale, ranging from *Not Important* to *Extremely Important*.

Figure 2
Sample Work Values Inventory Items

WorkKeys

Section 2

- This inventory consists of 18 work-related values. Read each item and indicate how important each work value is to you.
- Select your response from the following scale:

Not important
Slightly important
Important
Very important
Extremely important

	Not important	Slightly important	Important	Very important	Extremely important
1. Variety Using many different types of skills in my work.	<input type="radio"/>				
2. Public Contact Interacting with customers (as in sales) or the public (as in police work).	<input type="radio"/>				
3. Authority Telling people what to do; controlling the behavior of others.	<input type="radio"/>				
4. Precision Being exact or very accurate in the work I do.	<input type="radio"/>				
5. Helping People Improving the lives of others by activities such as teaching, physically assisting, or mentoring.	<input type="radio"/>				
6. Working Outdoors Working outdoors much of the time, being exposed to the weather.	<input type="radio"/>				

WorkKeys Fit Assessment Scoring

Fit Index scores are reported on the Employer and Examinee Score Reports, as described in Chapter 5. The procedure for obtaining the fit between a person's assessment responses and each occupation is automatically performed by the system. This procedure is summarized, for one occupation, in the following steps:

- A score is derived that measures the agreement between the person's six Interest Inventory scores and the corresponding six O*NET ratings.
- A score is derived that measures the agreement between the person's 18 responses to the Work Values Inventory and the corresponding 18 O*NET ratings.
- The two scores are summed to form the Fit raw score. Based on a national sample of adults, each raw score is then converted to a Fit standard score (with a mean of 0 and a standard deviation of 1) and to a percentile score ranging from 1 to 99. This percentile score is the Fit Index.

3

Development and Evaluation of the WorkKeys Fit Assessment

Employers must consider several issues before selecting a test for occupational fit. They must weigh the evidence that supports the validity of the test—that is, the evidence that supports whether the test measures what it is intended to measure. In addition, employers must consider the reliability of the test, and whether the test can be influenced by deliberate attempts to distort the results. Employers should also be concerned about examinee reactions to an assessment of fit. Finally, impact on the fairness of selection practices is important in evaluating a test of fit. Prior to discussing each of these issues in turn, this chapter briefly summarizes the development of the inventories in the WorkKeys Fit Assessment.

Development

Construction of the Interest Inventory and Work Values Inventory was guided by the need to produce results that correspond to available ratings in the O*NET occupational information system. Development of the Interest Inventory was conducted by an expert with over 25 years of experience in the field of career assessment. Item selection was informed by empirical data on over 4,000 adults. The inventory is scored on six scales, corresponding to the six “work environments” in the O*NET system. National norms were developed from a sample of over 12,000 adults. Additional information on the development of the Interest Inventory and norms is available in the Appendix.

Development of the Work Values Inventory was conducted by two career experts, each with over 25 years of experience in career assessment. The final set of values corresponded, directly or by combination, to 10 “work needs” and 14 “work contexts” in the O*NET system. National norms were developed based on a sample of over 12,000 adults. The development process and national norms are described in the Appendix.

Reliability

Reliability refers to the consistency of test results. The reliability of a test is reflected in the stability of test results over time and across settings. Employers should seek tests that yield consistent results, indicating that the test is dependable. Reliability is measured in two ways:

- *Internal consistency* is the most popular measure of reliability, and refers to how well items measuring the same concept relate with each other.
- *Temporal stability*, also known as *test-retest* reliability, assesses whether results and responses on items from a test are consistent over time.

Our review of the literature uncovered no information on the reliability of any published assessments of fit. With respect to the WorkKeys Fit Assessment, estimates of internal consistency are available for the Interest Inventory scales. These estimates range from .77 to .85, with a mean of .81 (see Appendix). Internal consistency estimates for a similar interest inventory used in other ACT programs have been found to range from .86 to .93 (ACT, 2006). Internal consistency estimates are influenced by the

number of items in the scale. Compared to instruments of similar length, the items on the Interest Inventory display excellent internal consistency. Temporal stability for inventories that share items with the Interest Inventory and the Work Values Inventory are discussed in the Appendix.

Validity

Validity refers to evidence that a test measures what it is intended to measure. Most of the published research on fit validity has focused on work attitudes such as job satisfaction and commitment to the organization. Reviews of the literature have consistently found evidence that occupational fit predicts work attitude outcomes. Validity estimates (correlations), however, are typically small to moderate. A review of 66 studies estimated that the correlation (uncorrected for measurement error and range restriction) between occupational fit and job satisfaction is about .25, with maximum correlations of .40 (Spokane, Meir, & Catalano, 2000). Studies conducted since this review have continued to find validity estimates in this range. For example, Ton and Hansen (2001) examined the correlation between satisfaction and two types of occupational fit: one based on interests (.24) and one based on values (.53). Although few studies have looked at the relationship between occupational fit and commitment, a recent study found a small but statistically significant relationship between fit and intent to leave one's current career (Donohue, 2006).

We have provided only a brief summary of some of the findings specifically related to occupational fit. However, two other types of fit are also frequently examined in the literature: job fit and organizational fit. When these related types of fit are considered, what observations can be made about the validity of fit? An extensive review of 172 studies found average uncorrected correlations of .44 for job fit and satisfaction, and .39 for job fit and commitment (Kristof-Brown, Zimmerman, & Johnson, 2005). The same review found uncorrected correlations of .35 for organizational fit and satisfaction, and .42 for organizational fit and commitment.

Although few studies focus on fit and work performance, a recent review found an average uncorrected correlation of .23 for organizational fit and task performance (Hoffman & Woehr, 2006). In addition, a review of job satisfaction and work performance found an overall corrected correlation of .30 (Judge, Bono, Thoresen, & Patton, 2001), suggesting that fit may indirectly predict work performance through its relationship with job satisfaction.

Based on the correlations noted above, it is evident that measures of fit explain (or predict) a small but nontrivial portion of an average person's work attitudes (in the 5-7% range). Predictive power in this range is useful. Work attitudes can predict performance (as noted above), thus prediction of work attitudes can contribute to the prediction of work performance. By adding noncognitive measures—like fit—to a selection system that already includes cognitive assessments, such as WorkKeys Foundational Skills tests, the ability to predict job success can be improved (Schmidt & Hunter, 1998). This is because a measure of fit taps aspects of job behavior that are different from those measured by cognitive ability. Indeed, research supports the idea that measures of fit provide incremental gains, beyond measures of cognitive ability alone, in predicting performance in a range of settings (Lawrence, 2004; Tracey & Robbins, 2006).

Validity evidence for the WorkKeys Fit Assessment is described in the Appendix. Two fundamental types of evidence are featured. First, if the assessment truly measures the fit between persons and occupations, then persons who are employed in occupations should, on average, display better fit with their current occupations than on other unrelated occupations. The WorkKeys Fit Assessment clearly differentiates in this manner. Second, if the assessment truly measures the fit between persons and occupations, it should predict work attitudes like satisfaction and commitment. The Fit Assessment does indeed predict satisfaction and commitment at levels consistent with the literature.

As noted earlier, the WorkKeys Fit Assessment consists of two inventories: the Interest Inventory and the Work Values Inventory. The Interest Inventory is a version of the inventory used in many of ACT's programs, and shares many of the same items. The validity of the ACT Interest Inventory is well established and is based on research conducted over the past 30 years (ACT, 1995, 2006).

Fakeability

Since some examinees may realize that the Fit Assessment matches them to occupations, there may occasionally be individuals who intentionally distort their responses in an effort to achieve the occupational matches they desire. This is no simple task, however.

When measuring interests or values, item content can involve specific work tasks (e.g., "Transfer commands from a server to a control module") or broader, common work-relevant activities (e.g., "Operate electronic equipment"). The inventories in the WorkKeys Fit Assessment use interest items that emphasize everyday work-relevant activities, and values items that emphasize broad work-relevant constructs. We do this for two reasons. First, it permits greater coverage of the breadth of work-relevant activities, enabling results to be generalized to hundreds of occupations—not just to the few occupations to which specific work tasks pertain. Second, when item content is not narrowly associated with specific occupations, the purpose of the items is less transparent.

There are six interest scales and 18 values items. As discussed in Chapter 2, scoring is based on profile similarity between an individual and occupations across the six interests and 18 values. Thus, respondents seeking to achieve certain occupation-match results must produce a profile across 24 measures (responding to items that are less than transparent) that accurately match one or a few occupations from 949 total occupations in the system—an unlikely scenario!

Examinee Reactions

Employers are frequently concerned about applicant and employee perceptions of hiring and firing decisions, and by extension, the assessments that aid those decisions. Research on examinee opinions has not focused on perceptions of fit assessments per se. However, research has shown that the majority of job applicants perceive personality tests—an umbrella category including fit tests—as an appropriate selection procedure. When asked to rate the favorability of ten selection procedures, personality tests ranked in the middle, below interviews and resumes, but above biodata and honesty tests (Hausknecht, Day, & Thomas, 2004).

Field study respondents (employed adults from seven organizations, as described in the Appendix) completed the Fit Assessment and were given the opportunity to provide confidential comments. Of 371 respondents, 87 (23%) provided positive or neutral comments. In contrast, only 10 participants (3%) provided negative comments. The other 274 respondents (74%) offered no comments.

Adverse Impact

Adverse impact results when there is unfair discrimination against members of protected classes, regardless of an employer's intent. One source of evidence for adverse impact is when members of a protected class are selected at rates that are less than four-fifths (80%) of the group with the highest selection rate.

Although a recent review of the literature failed to find any published research on the adverse impact of fit measures (Arthur, Bell, Villado, & Doverspike, 2006), group differences on the WorkKeys Fit Assessment have been evaluated. The results show that the assessment does not result in adverse impact on the basis of gender, race/ethnicity, or age. (Please refer to the Appendix for more details).

Compliance with Guidelines and Standards

The Fit Assessment is in compliance with the test development guidelines recommended by the International Test Commission (2006), the Association of Test Publishers (2002), the Society for Industrial and Organizational Psychology (2003), and the guidelines recommended by the Joint Committee on Standards for Educational and Psychological Testing (consisting of the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education) (1999). These standards address "criteria for the evaluation of tests, testing practices, and the effects of test use" (p. 2) including delivery formats, administration and hardware/software requirements, and the documentation of the validity and reliability of a test (Joint Committee on Standards for Educational and Psychological Testing, 1999).

The Equal Employment Opportunity Commission (EEOC) has provided detailed guidelines for employment testing (EEOC, 1978). Along with many other recommendations, the EEOC advises that tests that show adverse impact should generally be avoided; however, the business necessity of the use of a test should be demonstrated if a test does show adverse impact against any demographic groups. The Fit Assessment has been designed to meet the EEOC standards. It has been found to bear no undue negative impact on any racial/ethnic or gender groups. Employers can use this information to assist them in adopting lawful and appropriate hiring practices and to avoid legal challenges to their screening and hiring practices.

4

Administration of the WorkKeys Fit Assessment

The Fit Assessment is highly efficient and practical in terms of cost, length of time for test administration, type of equipment needed, and test user training. The assessment is administered entirely online through a Web-based platform, thus reducing the costs normally associated with the administration, scoring, and reporting of traditional paper-and-pencil tests. As a result, the Fit Assessment only requires basic computing and Internet hardware and software, facilitating an easy-to-use and cost-efficient account management system for employers.

A comprehensive WorkKeys Internet Version Test Administration and User Guide is available at www.act.org/workkeys/pdf/WorkKeysInternetUserGuide.pdf. This document contains instructions for test administrators, including details on steps required for setting up examinees in the online environment and managing company examinees for the entire WorkKeys line of products. Other documents, including frequently asked questions (FAQs), are available at www.act.org/workkeys/assess/personal.html.

Testing Environment

Remind users to turn off pagers, cell phones, and/or wristwatch alarms to avoid distracting other users. All testing staff, room supervisors, and proctors are to remain attentive to their testing responsibilities throughout the entire administration. To protect the validity of individual test scores and maintain the security of the test materials, the following must be observed:

- Walk around the room during testing to be sure users are working on the correct assessment and to prevent prohibited behaviors.
- During the assessment, do not read or engage in any tasks not related to the administration of the assessment.
- Do not engage in conversation during the assessment or allow unauthorized personnel into the testing room.
- Do not leave the testing room unattended at any time.

More information on the testing environment and administrator guides is in the Test Administration and User Guide.

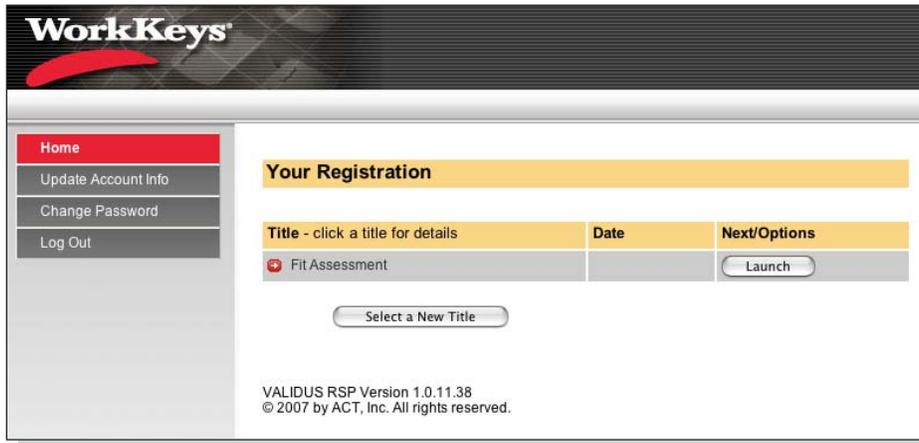
Examinee Setup in the Validus™ Virtual Test Center

The administrator will need to set up the examinee in the Validus Virtual Test Center prior to the examinee beginning the test. Please refer to the Test Administration and User Guide for instructions.

Welcome Screen and Confidentiality Agreement

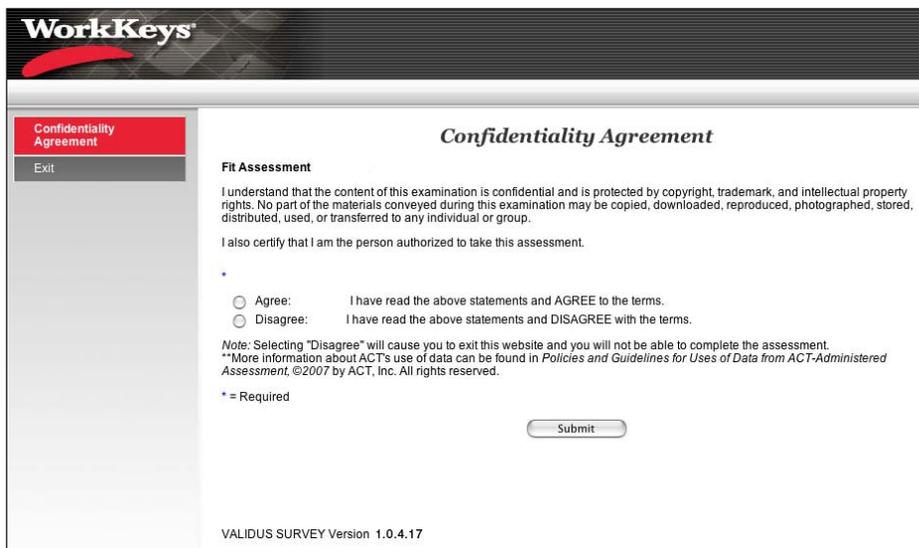
The assessment's Web-delivered welcome screen is shown in Figure 3.

Figure 3
Welcome Screen for the Fit Assessment



Prior to starting the Fit Assessment, all examinees are required to agree to the confidentiality agreement (see Figure 4). The agreement expresses the confidential nature of the contents of the test. Examinees who do not endorse the confidentiality agreement will not be able to proceed to the actual assessment. The assessment will still be counted as used even if an examinee does not agree to the confidentiality statement.

Figure 4
Confidentiality Agreement



Test Instructions for Examinees

Examinees are required to provide demographic information and to select at least one occupation to obtain fit results on (see Figure 5). Examinees are allowed to select up to five occupations, with the first (called the “primary occupation”) being required for scoring. A lookup table function is used in this part of the assessment, and a help page is available to guide examinees through the process of locating occupational titles. The help page also includes O*NET codes.

Figure 5
Primary Occupation

What occupations are you interested in?

- The first occupation that you select should be the one you are most interested in. Selecting the first occupation is required, and you are able to select up to 4 additional occupations.
- Select occupations you are interested in by first selecting the occupation category and then the related subcategory. Each occupation is listed in only one occupation category and related subcategory. You may need to check more than one category to find the occupation. For example: Hospitals employ accountants, but accountant is not found in one of our Healthcare categories. It is found in the Business and Financial Operations category.
- For additional information on the categories or occupation titles, click on the “?”

1. First Occupation - This is the one you are most interested in.

* Select a category (for more information click on the “?”)
- Select -

* Select a subcategory (for more information click on the “?”)
- Select -

* Select an occupation title (for more information click on the “?”)
- Select -

Instructions for completing the Interest Inventory and Work Values Inventory are shown, along with example items, in Figures 1 and 2 (see Chapter 2).

Accommodations for Examinees for Whom English Is a Second Language

Examinees for whom English is a second language may bring and use a foreign language dictionary. The test administrator must check the dictionary, before and after testing, to ensure that it does not contain any of the test items or responses to test items.

Reporting the Results of the WorkKeys Fit Assessment

Scoring and reporting for the Fit Assessment is instantaneous. A PDF document is created and stored in a secure server for access by the client/employer immediately after the examinee has completed the assessment or at a later time (up to one year). Two different reports—briefly described below—are generated. A thorough explanation of the different components of these reports can be found in Chapter 5.

- *The Employer Report.* The Employer Report provides details on each individual's occupational fit profile. For each individual who takes the Fit Assessment, this report provides: (a) a Fit Index for up to five occupations specified by the examinee (as directed, in most cases, by the employer); (b) Fit indices for up to 19 occupations related to the specified primary occupation; and (c) a list of the 10 occupations with the highest Fit Index, regardless of the specified occupations. Level of fit (low, moderate, high) based on the Fit Index is reported for specified and related occupations. In addition, the report displays the results of the Interest Inventory and Work Values Inventory.
- *The Examinee Report.* The Examinee Report provides the same information found on the Employer Report. Minor wording differences in this report reflect the fact that it is intended for an examinee.

5

Interpreting Employer, Examinee, and List Reports

The WorkKeys Fit Assessment measures an individual's occupational fit based on the responses given to the Interest Inventory and the Work Values Inventory. The Interest Inventory, discussed in more detail in Chapter 2, consists of six scales encompassing a broad range of basic interests. They include:

1. Administration & Sales
2. Business Operations
3. Technical
4. Science & Technology
5. Arts
6. Social Service

The Work Values Inventory consists of 18 items reflecting a broad range of work-relevant values:

- | | |
|-----------------------------|---------------------------|
| 1. Authority | 10. Physical Activity |
| 2. Autonomy | 11. Precision |
| 3. Compensation | 12. Public Contact |
| 4. Creativity | 13. Social Status |
| 5. Flexible Hours | 14. Taking Risks |
| 6. Helping People | 15. Using My Hands |
| 7. Influencing Others | 16. Variety |
| 8. Intellectual Stimulation | 17. Working Independently |
| 9. Order | 18. Working Outdoors |

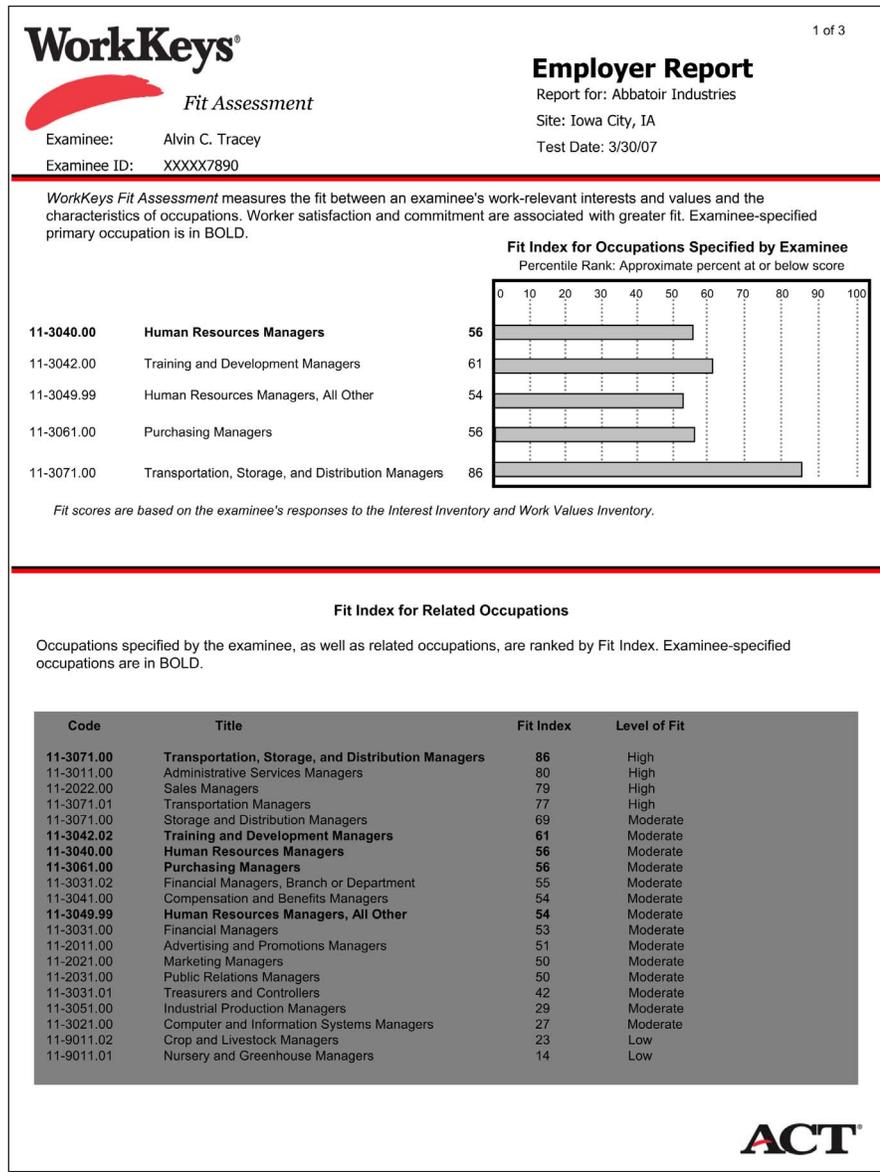
All Fit Assessment reports communicate the level of agreement (fit) between examinee responses to the above inventories and corresponding characteristics of occupations. There are three types of reports: the Employer Report, the Examinee Report, and the List Report. Several sections of the Employer Report and Examinee Report contain graphical representations to aid in the interpretation of the results. This chapter provides sample reports and explains the meaning of the scores. Each section of a report is described in turn.

The Employer Report

We start with Employer reports, which should reflect the appropriate test (upper left-hand corner). As seen in Figure 6, the following identifiers appear at the top of the page:

- *Report for:* Your company name
- *Site:* Your company location or division (if company has multiple sites)
- *Test Date:* Date the particular test was completed
- *Examinee:* The name of the test taker
- *Examinee ID:* Last 4 digits of the unique identifier for each examinee

Figure 6
Employer Report: Fit Index Scores for Selected and Related Occupations



Fit Index for Occupations Specified by Examinee

The first section of the report (see Figure 6) shows the Fit Index for occupations specified by the examinee. The examinee can specify up to five occupations. The first occupation selected by the examinee, shown in bold on the report, is referred to as the *primary occupation*. (If the examinee is a job applicant, the primary occupation will typically represent the job the examinee has applied for.) Any non-primary occupations are listed in ascending O*NET code order. Each occupation title is listed with its unique O*NET occupation code. A Fit Index is reported for each occupation, as well as a bar graph showing the percent of persons in the norms sample scoring at or below the examinee's score. As described in Chapter 2, the Fit Index is

based on the Interest and Work Values Inventories completed by the examinee. The index is a percentile score that ranges from 1 to 99, reflecting lowest fit to highest fit. Higher scores reflect greater agreement between inventory results and corresponding characteristics of the occupation.

In this example, Human Resources Manager has a Fit Index of 56, meaning that the examinee scored, for this occupation, at or above 56% of the national norms sample. (The norms sample is described in the Appendix.) In other words, the level of agreement between this examinee's inventory responses and the characteristics of this occupation was only moderately high, meeting or exceeding only 56% of the norms sample. In contrast, Transportation, Storage, and Distribution Manager has a Fit Index of 86, meaning that the examinee scored at or above 86% of the norms sample—a high level of fit. Thus, the results show that the examinee's inventory responses fit the occupation of Transportation, Storage, and Distribution Manager better than Human Resources Manager. The last sentence in this section of the report indicates that these scores are based on the combined responses of the examinee to the Interest and the Work Values Inventories.

Fit Index for Related Occupations

The second section of the report (see Figure 6) lists up to 20 occupations rank ordered by Fit Index. There are two types of occupations on this list: those specified by the examinee, as well as related occupations. The occupations specified by the examinee are bolded to distinguish them from the broader set of related occupations. The O*NET occupation code, job title, and associated Fit Index are shown. Also shown in the final column is the level of Fit. As shown in Table 2, the Fit level falls into three categories based on the following Fit Index ranges.

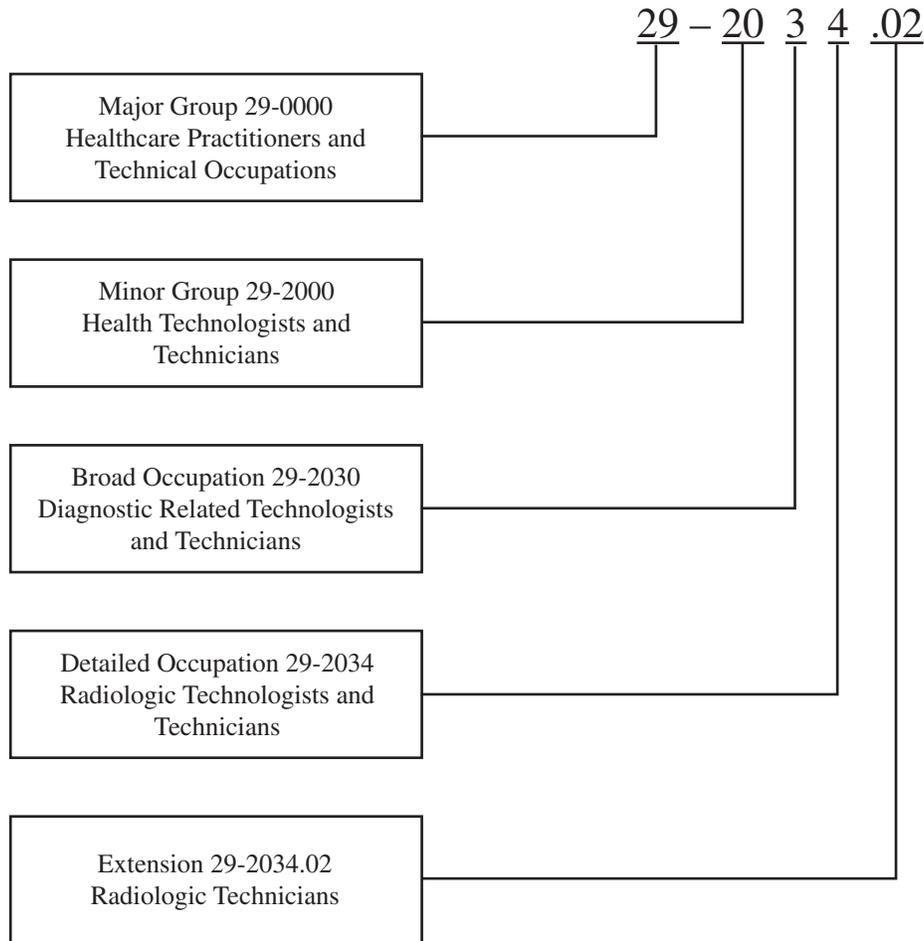
Table 2
Fit Levels and Score Ranges

Level of Fit	Fit Index Range
High	76–99
Moderate	26–75
Low	1–25

The related occupations are intended to be used for comparison purposes. They are automatically selected by the system and are based on the taxonomy of the O*NET occupational classification system. The eight-digit O*NET code classifies an occupation into a major group (indicated by the first two digits), a minor group (indicated by the next two digits), and successively narrower categories (indicated by the remaining digits). This system is depicted in Figure 7. For any two occupations, relatedness can be determined by identifying the consecutive numerical matches, from left to right, between the two code numbers. Using this logic, the related occupations listed in this section of the report are those most closely matching the O*NET codes of the occupations listed in the first section of the report.

Figure 7
*O*NET Classification System: Example Occupation*

Radiologic Technicians 29–2034.02

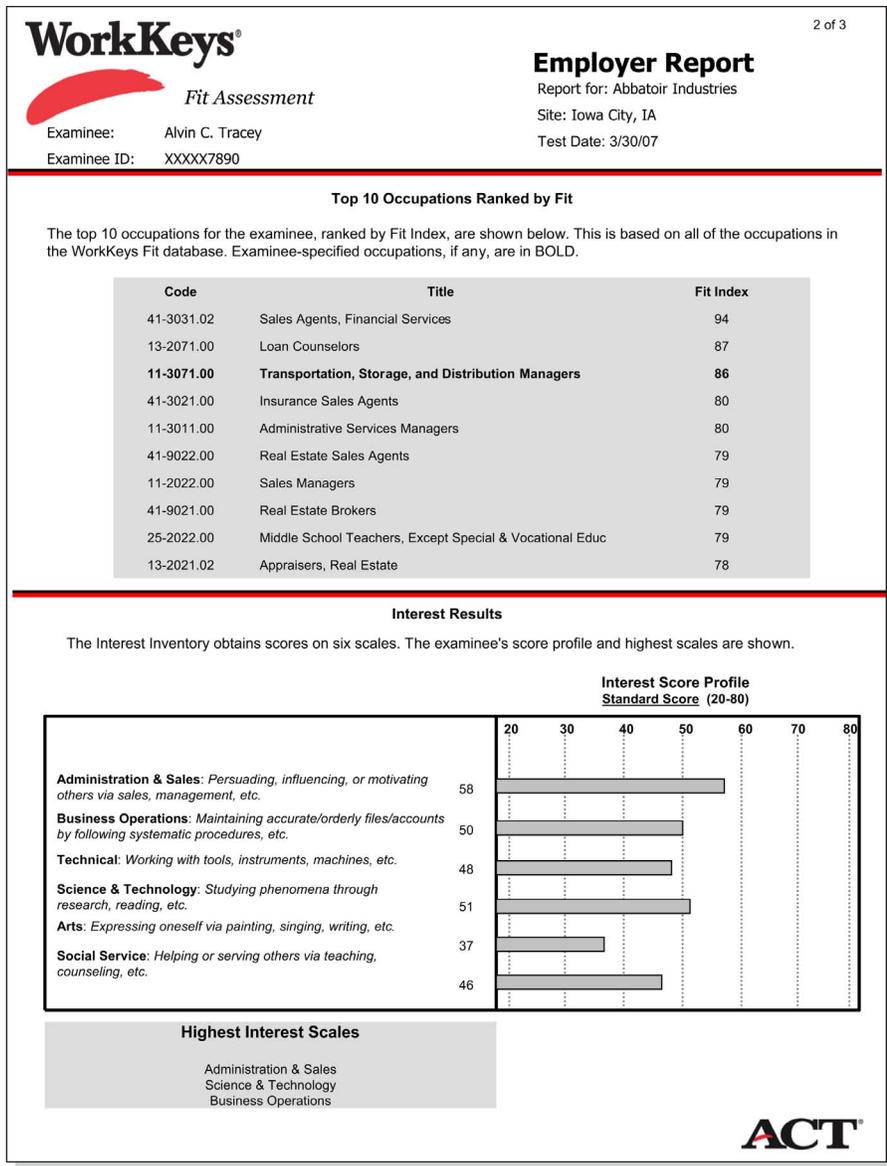


In Figure 6, the highest Fit Index was obtained for Transportation, Storage, and Distribution Manager. This means that, based on the examinee’s interests and values, there is a high level occupational fit between the examinee and this occupation. Further down the list, a moderate level of fit was obtained for Training and Development Manager. This means that there is a moderate level of fit between the examinee and this occupation based on the individual’s interests and values. A low level of fit was obtained for Crop and Livestock Manager, meaning that there is a very low level of occupational fit between the individual and this particular occupation, given the examinee’s measured interests and values.

Top 10 Occupations Ranked by Fit

The third section of the report (see Figure 8) displays the 10 occupations for which the examinee received the highest Fit Index scores, rank ordered by Fit Index. The top 10 are selected from the entire list of 949 occupations in the system. Fit indices for all 949 occupations are scored, and from this exhaustive list, the 10 occupations with the highest scores are reported. As a result, this list may not necessarily contain any of the occupations listed in the two prior sections of the report. However, examinee-specified occupations will appear in bold if they are on this list. As seen in the example in Figure 8, Transportation, Storage, and Distribution Manager is the only occupation previously specified by the examinee to score in the top 10, and as a result, appears in bold in its proper place in the rank order.

Figure 8
Employer Report: Top 10 Occupations and Interest Inventory Results



Interest Results

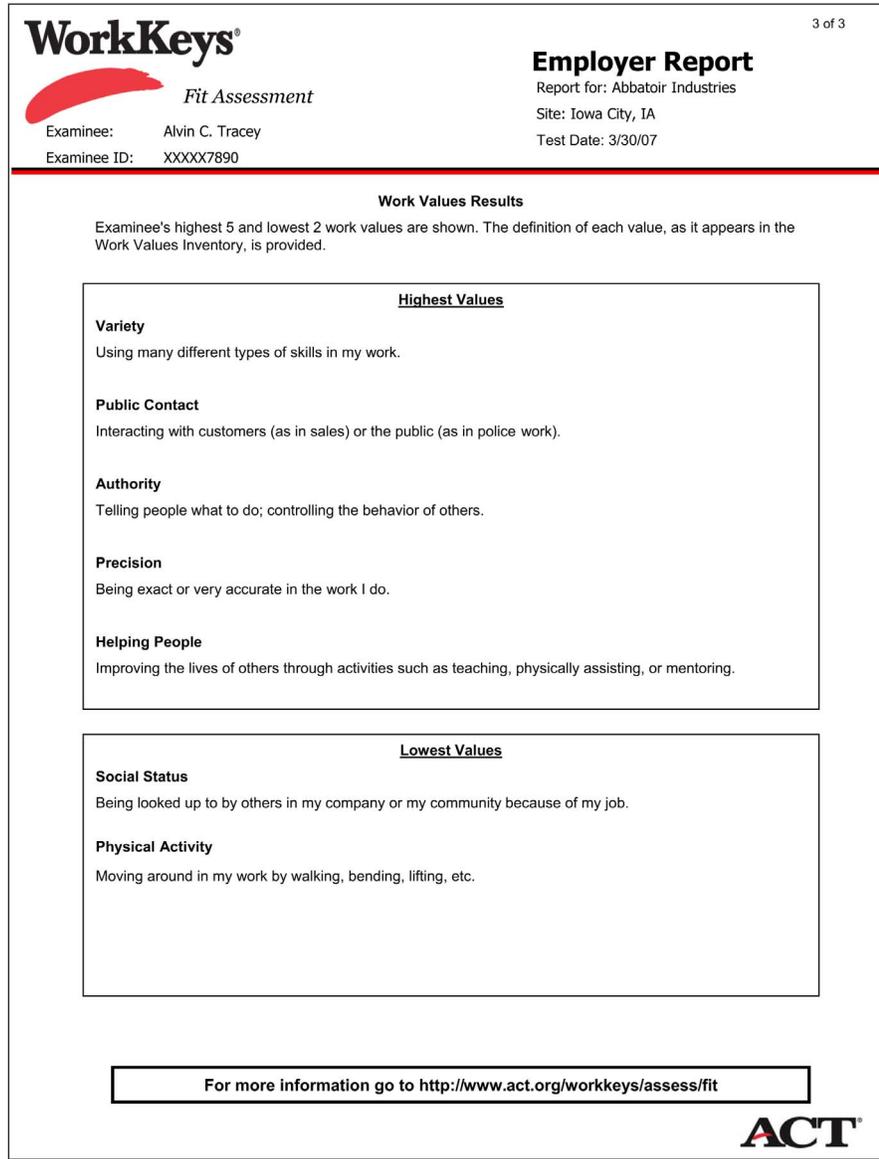
Up to this point, all sections of the report have been based on the Fit Index, which combines results from both the Interest and Work Values Inventories. The fourth section, however, presents the examinee's score profile on the Interest Inventory alone. For more information on the six scales that make up the Interest Inventory, please see Chapter 2.

For each scale, a standard score based on national norms is reported. Scores range from 20 to 80, with a mean of 50. The bar graph is a visual depiction of the level of interest on each scale. The highest interest scales are listed below the graph and correspond to the highest scores shown on the bar graph. In Figure 8, the graph and the associated standard scores indicate that this examinee obtained their highest score on the Administration & Sales scale, followed by the Science & Technology scale and the Business Operations scale. Descriptions of these scales are found in Table 1 (Chapter 2).

Work Values Results

The last section of the report (see Figure 9) shows the examinee's highest and lowest work values. These results are based on the Work Values Inventory. For more information on the Work Values Inventory, please see Chapter 2.

Figure 9
Employer Report: Work Values Inventory Results



Unlike the Interest Results section, there are no bar graphs for Work Values Inventory results. Instead, this section lists the five highest and two lowest work values. Highest and lowest work values are determined in the system by converting raw responses to standard scores based on national norms and ranking them in descending order. For example, in Figure 9, the examinee scored highest on Variety, Public Contact, Authority, Precision, and Helping People. Social Status and Physical Activity had the two lowest scores and are shown at the bottom of the section.

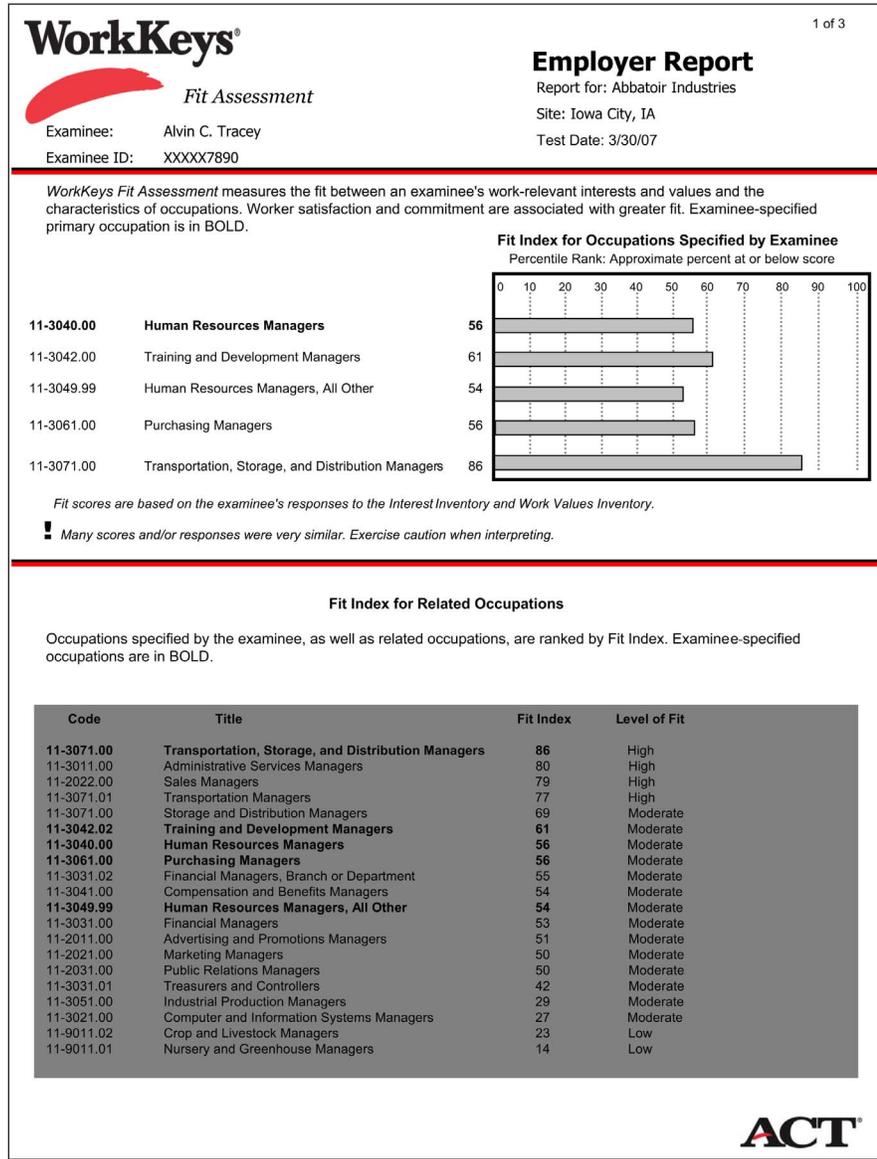
Exceptions to the Fit Employer Report

The Fit Index is based on the Interest Inventory and Work Values Inventory completed by the examinee. The results from these inventories are a pattern of scale scores (interests) and response scores (work values), and the interpretability of these results depends on the clarity of these patterns. The results from these inventories can differ in clarity. If the results show peaks and valleys (e.g., both high and low interest scores) the results are clear. This is the typical condition, and both scoring and interpretation are routine.

But occasionally interest and/or work values responses are very unclear. In these instances, the interest score profile is flat (or nearly so), or nearly all of the work value responses are the same. Since the Fit Index shows the agreement between the patterns of personal and occupational attributes, fit based on inventory results having little or no pattern should be approached cautiously.

As shown in Figure 10, when Fit Index results are based on very unclear inventory results, the last sentence in the first section of the report reads “Many scores and/or responses were very similar. Exercise caution when interpreting.” If the source of the caution is interest results, the last sentence in the *Interest Results* section reads “Several scores were tied, or nearly tied, for highest. Exercise caution when interpreting.” If the source of the caution is work values results, the last sentence in the *Work Values Results* section reads “Many responses were identical. Exercise caution when interpreting.” These statements notify the employer that the results are based on unclear inventory results. In these instances we recommend that employers de-emphasize WorkKeys Fit Assessment results in the evaluation process.

Figure 10
Employer Report with Unclear Response Flag



Why are inventory results occasionally unclear? This may be due to examinees responding to items quickly, without careful reading. (Unclear results are *not* likely due to deliberate attempts to distort the results of the test, since examinees have no motive to produce muddy results.) Of course, there are people who, over the course of their lives, have developed relatively undifferentiated interests and work values. The report may simply reflect this, and absent information to the contrary, such results should be taken at face value.

The Examinee Report

Employers have the option of giving examinees access to their results. For this reason, an Examinee Report is available. The Examinee Report is very similar to the Employer Report described in detail above. Minor wording differences, found in statements scattered throughout the report, are tailored to address the examinee. For example, the first section of the Examinee Report has a statement that reads:

WorkKeys Fit Assessment measures the fit between *your* work-relevant interests and values and the characteristics of occupations.

The Employer Report, in contrast, refers to the *examinee's* work-relevant interests and values. As on the Employer Report, the Examinee Report also provides caution messages when inventory results are unclear.

The List Report

The Validus system (see Chapter 4) produces a List Report for all persons who have taken the WorkKeys Fit Assessment for the company during a specified period of time. The List Report includes identifier details for the company including:

- *Report for*: Name of the company
- *Site*: Location or division of the company (if company has multiple sites)
- *Report Date*: When the report was generated

As discussed below, the List Report also includes information on filters applied to the results, as well as the sort order of results:

- *Date Range*: Results filtered by date range of assessment administration
- *Occupation Code*: Results filtered by occupation code within the company, if applicable
- *Sort by*: Results sorted in a specified order

The List Report details the examinee's name, the last four digits of a unique identification number, the primary occupation code (the O*NET number for the first occupation that the examinee selected), and the date the assessment was completed. The Fit Index score and recommended category (high, moderate, low) are displayed in individual columns.

List Reports can be generated through sorting functions built into the system. There are two sorting functions: examinees may be sorted by name or by Fit Index score. The featured List Report (see Figure 11) is sorted by the Fit Index score, ranging from highly desirable to less desirable. This is the default sort function.

Figure 11
List Report Sorted by Fit Index

 Fit Assessment		Report for: Abattoir Industries Site: Iowa City Report Date: Feb 14, 2007		List Report Date Range: 01/01/2006 to 03/30/2007 Occupation Code: <All> Sort by: Fit Index	
Examinee	Examinee ID	Primary Occupation Code	Date Tested	FIT INDEX (1-99%ile)	Recommended Category Based on Level of Fit
Carter, Linda	XXXXX9112	11-3042.00	11/14/2006	98	High
Smith, Bob	XXXXX0733	11-3061.00	11/14/2006	94	High
White, Tashon	XXXXX0944	11-3042.00	11/14/2006	91	High
King, Billie	XXXXX9922	11-3061.02	11/14/2006	89	High
Duff, Patrick	XXXXX0077	11-3071.02	11/14/2006	82	High
Castillo, Leo	XXXXX8788	11-3042.00	11/14/2006	62	Moderate
Murphy, Edie	XXXXX3400	11-3071.01	11/14/2006	60	Moderate
Pak, Ruth	XXXXX8899	11-3061.00	11/14/2006	58	Moderate
Villanegro, Mari	XXXXX6711	11-3071.02	11/14/2006	49	Moderate
Grover, Arnold	XXXXX5433	11-3042.00	11/14/2006	44	Moderate
Reynolds, Bart	XXXXX8722	11-3071.01	11/14/2006	39	Moderate
Tezzini, Frank	XXXXX5644	11-3042.00	11/14/2006	27	Moderate
Black, Lois	XXXXX8688	11-3061.00	11/14/2006	26	Moderate
Clark, Lewis	XXXXX2166	11-3071.02	11/14/2006	26	Moderate
Starr, Sam	XXXXX4100	11-3071.02	11/14/2006	19	Low
Jones, Fred	XXXXX2907	11-3042.00	11/14/2006	09	Low
Lester, Kelsey	XXXXX3768	11-3071.02	11/14/2006	08	Low

Notes: If this report is filtered by a specific occupation code, the Fit Index and Recommended Category are for the filtered occupation.
 I = Exercise caution when interpreting. See the score report.

ACT

List Reports can also be generated through filtering functions in the system. Filters may be used to narrow down a pool of examinees based on specific criteria from the larger pool of test takers in the company’s database. For instance, the employer can choose to filter by a specific occupation code or by the date individuals completed the Fit Assessment.

When occupation code is selected as the filter criteria, all of the occupation codes selected by the examinee are scanned for any appearance of that code, and individuals with the specified code are featured in the List Report. Although the report still lists the primary occupation code in its own column, the listed Fit Index and recommended category correspond to the filtered occupation code specified at the top of the report.

When an occupation code filter is not applied, the filter criterion is specified as “all” (as shown for occupation code in Figure 11). In this case, the listed Fit Index and recommended category corresponds to the listed primary occupation.

Appendix

Development of the WorkKeys Fit Assessment and Research Findings

This Appendix is designed to give interested readers a brief background on the development process and technical properties of the WorkKeys Fit Assessment. We describe the steps in the process, provide information on the properties of the assessment (validity, reliability, etc.) as well as information on other important issues, such as adverse impact. Although a careful review of this Appendix is not necessary to use and understand the Fit Assessment, it is of value to those readers seeking additional information on the technical characteristics of the instrument.

Development of the Inventory Components of the Fit Assessment

A three-part process was used to develop the inventory components of the Fit Assessment: (1) selection of items; (2) development of norms; and (3) determination of item and scale characteristics.

Item Selection

The WorkKeys Fit Assessment was designed to compare person characteristics (interests and work values) to occupation characteristics based on ratings in the O*NET occupational information system. For this reason, construction of the Interest Inventory and Work Values Inventory was guided by the requirement that they generate results corresponding to available O*NET occupational ratings. Interest Inventory scales were designed to correspond to the six “work environment” ratings for each occupation in the O*NET system (Rounds, Smith, Hubert, Lewis, & Rivkin, 1998). Work Values Inventory items were designed to correspond to selected “work needs” and “work contexts” in the O*NET system (National Center for O*NET Development, 2006).

Interest Inventory. The Interest Inventory used in the WorkKeys Fit Assessment is a new edition of the ACT Interest Inventory. The ACT Interest Inventory, first introduced in 1977, is a component of several ACT programs and is currently completed by over 4 million persons each year. The ACT Interest Inventory items and norms are updated periodically, and were last updated in 2006. The items describe common, work-related activities that are familiar to people through participation or observation. Occupational titles and specific job duties are not used. The six scales cover the full spectrum of basic work tasks and parallel the six interest types in John Holland’s well-known theory of careers (Holland, 1997) and the O*NET work environments. Extensive validity information on this instrument is found in the ACT Interest Inventory Technical Manual (ACT, 1995) and more recent ACT materials (ACT 2001, 2006).

Development of the Fit Assessment Interest Inventory involved identifying the best 72 items (12 items per scale) from the ACT Interest Inventory item pool, based on item performance and content guidelines. Item performance was based on a sample of 4019 adults age 21–59 who completed the ACT Interest Inventory in 2003–04. The following performance guidelines, in priority order, were used in making judgments regarding item selection.

Items were sought: (a) with higher item-to-scale correlations; (b) that contributed to bringing the pattern of observed scale-to-scale correlations in line with the theory underlying the instrument; and (c) that contributed to a heterogeneous mix of activities within a given scale. These guidelines were similar to those used in previous updates of the instrument. Because items in the item pool were intended for a wide age range, items were evaluated to ensure that content was appropriate for adults age 18 and older (the target age range for the Fit Assessment Interest Inventory).

Implementation of these guidelines resulted in a final set of 72 items, representing a subset of the 90 items in the original item pool. Twelve additional items, unscored in the Fit Assessment system, were selected or written for the purposes of future research. Development of the Fit Assessment Interest Inventory was conducted by an ACT researcher with over 25 years of experience in the field of career assessment.

Work Values Inventory. Items for the Work Values Inventory were written by two ACT researchers, each with over 25 years of experience in career assessment. Items were designed to correspond to selected work needs and work contexts in the O*NET system. Item content was drawn, when applicable, from the Inventory of Work-Relevant Values (IWRV). IWRV is an assessment component of DISCOVER®, ACT's online career planning system. Because DISCOVER is designed to facilitate comprehensive career planning, the values in IWRV are designed to link to a broad, comprehensive range of occupations. The final 18 items were judged to correspond to 16 of the 22 DISCOVER values, 10 of the 21 O*NET work values, and 14 of the 57 O*NET work contexts.

Development of Norms

The national norms sample consists of 12,946 adults (equal numbers of males and females) who completed both the 90-item ACT Interest Inventory and the 22-item IWRV between September 2003 and September 2006. Both inventories were completed online as part of ACT's DISCOVER program. Only persons identifying themselves as "Job Seeking/Working Adults" were included in the sample.

To enhance the interpretability of Interest Inventory raw scores and Work Values Inventory item scores, these scores were standardized using the means and standard deviations observed in the national norms sample. The resulting standardized scores, along with the O*NET ratings (discussed in the next section), were used to generate Fit raw scores on all 949 O*NET occupations for every member of the national norms sample (a brief summary of Fit scoring is described in Chapter 2). For each of the 949 O*NET occupations, the distribution of Fit raw scores observed in the national norms sample is used to generate Fit Index scores, which are percentile scores ranging from 1 to 99.

Item and Scale Properties

Readability. Using the Flesch-Kincaid method (Flesch, 1948), the average reading level across the six Interest Inventory scales is 5.6, and the average reading level across the 18 Work Values Inventory items is 6.8. Thus the two inventories read at the 5th- to 6th-grade reading level. Readers should keep in mind that all reading level methods provide estimates, and that reading level estimates should be considered in conjunction with the length of the reading passages. In the case of the Fit Assessment, there are 102 items, requiring only about 10–15 minutes to complete.

Reliability. Reliability refers to the consistency of items or scores. Estimates of *internal consistency* measure the degree to which items in a scale are related to one another. Internal consistency reliability estimates (coefficient alphas) for the Interest Inventory were obtained from the field study sample described below. As seen in Table A1, reliability estimates across the six scales ranged from .77 to .85, with a mean of .81.

Table A1
Interest Inventory Internal Consistency Reliability

Scale	Alpha
Administration & Sales	.79
Business Operations	.84
Technical	.78
Science & Technology	.85
Arts	.82
Social Service	.77

Note. Data are from the field study ($N = 327$).

As noted above, the 72 items in the Interest Inventory are a subset of the 90 items in the ACT Interest Inventory. As such, coefficient alphas for the ACT Interest Inventory are pertinent. Internal consistency estimates for additional samples are discussed in the technical manual and booklet for that instrument (ACT, 1995; 2006). Median test-retest stability estimates, ranging from .82 to .70 for intervals of three weeks to eight months, respectively, are also reported in these materials. The various reliability estimates for the ACT Interest Inventory compare favorably with reliabilities reported for similar well-known interest inventories.

Internal consistency reliability estimates are not appropriate for the Work Values Inventory, because the items are not intended to relate to one another. However, test-retest stability estimates are available for IWRV, the source instrument for many of the Work Values Inventory items. Across a two-week interval these estimates ranged from .37 to .61 (mean of .50) for the 16 items corresponding to values in the Work Values Inventory (Bobek & Gore, 2004).

Occupational Ratings

Source of Occupations

The WorkKeys Fit Assessment calculates fit with respect to the 949 occupations included in O*NET 10.0 (National Center for O*NET Development, 2006). O*NET, the nation's primary source of occupational information, includes both a taxonomy of occupations and a database of attributes of those occupations. First released in 1998, O*NET has been updated and adapted to changes in the labor market. The classification of occupations in O*NET is based on the Standard Occupational Classification System (SOC) and the resulting taxonomy is called O*NET-SOC 2006. SOC uses six-digit numbers to classify occupations and uses four levels of aggregation (i.e., 23 major groups, 96 minor groups, 449 broad occupations and 821 detailed occupations). O*NET further subdivides some SOC occupations using a decimal and two additional digits, producing an eight-digit number.

Assignment of Ratings

Scoring of the WorkKeys Fit Assessment requires that examinee interests and work values be compared to the corresponding attributes of occupations. Although ratings were available in O*NET (used in the scoring of various *O*NET Career Exploration Tools*), they were not available for all occupations and all corresponding attributes. Therefore ratings were assigned, as described below, by ACT career experts to achieve complete rating profiles for all 949 occupations.

Supplemental Ratings for Interests. Both the six Interest Inventory scales and the six O*NET work environments parallel the six career types proposed by Holland (1997). Review of O*NET identified 748 occupations with work environment ratings. Ratings for the remaining 201 occupations were made by an ACT career expert with over 25 years of experience in rating occupations. Ratings were based on the definitions of Holland types and O*NET occupation descriptions. Rating assignment consistency was evaluated by comparing the ratings of similar sets of occupations. Discrepant ratings were reviewed and revised as needed.

Ratings for Work Values. Although a review of O*NET work needs and work contexts identified 796 occupations with ratings for some or all of the values corresponding to the Work Values Inventory, several concerns led to the decision to review, and when necessary recode, every value for every occupation. Among these concerns were ambiguities in the O*NET work need and work context ratings, making it difficult to formalize coding rules for unrated values.

To address these concerns, a new set of coding rules was developed to assign new ratings for every value for every occupation. These rules included the following for each value:

- The operational Work Values Inventory definition of the value. These definitions retain the intent of O*NET value definitions, but were revised to enhance item clarity for both examinees and raters. (For example, the O*NET *Social Service* work need definition, “Do things for other people,” was revised to the Work Values Inventory *Helping People* definition, “Improving the lives of others by activities such as teaching, physically assisting, or mentoring.”).
- A detailed definition of the value, providing examples of essential distinctions and addressing potential rating ambiguities.
- Multiple examples of anchor occupations for the upper, lower, and middle ratings on the scale.

Ratings were initially assigned by a team of two ACT career experts with over 25 years of experience in rating occupations. Raters referred to O*NET ratings, O*NET occupational descriptions, and DISCOVER ratings where relevant. Rating assignment consistency was evaluated by comparing the ratings of similar sets of occupations. Discrepant ratings were reviewed and revised as needed. The ratings were subsequently reviewed by a third ACT career expert for appropriateness and consistency. Questionable ratings were discussed and revised as needed.

Field Study

Evidence of reliability (discussed above) and validity (discussed on the next page) were obtained from a sample of employed adults participating in a field study conducted in the winter of 2006–07. Participants were from seven organizations spanning different types of industries, including manufacturing, healthcare, education, information services, as well as educational testing and publishing. Size of participating organizations ranged from small businesses to branches of multinational companies.

Of 371 records, 44 were not used because of missing data, inconsistent responding (e.g., random responding), or lack of variability in responses (e.g., answering *extremely important* to every item). Of the remaining records ($N = 327$), participants represented 52 of the 949 O*NET occupations, and these occupations represented 15 of the 23 O*NET major occupational groups. The most common major occupational groups in the sample were: Transportation and Material Moving (48%), Production (18%), Office and Administrative Support (10%), and Installation, Maintenance, and Repair (6%). Examples of the other represented major groups were Business and Financial Operations (5%), Education, Training, and Library (5%), and Management (2%).

Participants ranged in age from 19 to 66 years, were mostly male, Caucasian, and had completed a high school diploma. The average participant had occupied the same position for over two years. A more detailed breakdown of participants’ demographic characteristics is shown in Table A2.

Table A2
Demographic Characteristics of the Field Study Sample

Characteristic	%
Gender	
Female	34
Male	66
Age	
19–29	19
30–39	31
40–49	26
50–59	18
60–66	5
Race/Ethnicity	
African American/Black	29
Native American or Alaska Native	0
Caucasian/White	48
Hispanic/Latino	8
Asian American/Pacific Islander	8
Multiracial	2
Other	3
No Response	3
Education	
No formal education	1
Elementary/Middle school	2
High school diploma	47
GED	8
Trade school certification	15
Associate’s degree	9
Bachelor’s degree	10
Master’s degree	7
Doctorate degree	2

Note. N = 327.

Validity

Differentiation

One of the basic assumptions underlying the concept of fit is that, given time, persons tend to gravitate to occupations that are in harmony with their personal characteristics. For example, persons with interpersonal skills, who prefer talking to others and working indoors, and who value opportunities to influence others, are likely to be found in sales jobs—not in construction. Persons gravitate toward opportunities to engage in activities that match their skills, interests, and values, and thus are personally rewarding. If this assumption is true, and if a measure of fit is valid, then the measure should

be able to differentiate between occupations that fit individuals, and those that do not. For example, the measure should show more fit between incumbent salespersons and sales occupations than between incumbent salespersons and construction occupations.

Thus, if the Fit Index is valid, we would expect it to differentiate between occupations based on similarity to one’s current occupation. One way to examine this is shown in Table A3. This table shows, for three levels of occupational similarity, the percentage of Fit Index scores (calculated for field study participants) falling in each of three score levels. The first row, called “Same,” refers to Fit Index scores calculated with respect to current occupation of field study participants. The second row, called “Similar,” refers to Fit Index scores calculated with respect to all occupations in the O*NET major occupational group (see Figure 7) of the current occupation of participants, excluding the current occupation itself. Thus it displays Fit Index scores for similar occupations, as defined by O*NET. The third row, called “Dissimilar,” refers to Fit Index scores calculated with respect to all occupations not in the O*NET major occupational group of the current occupation of participants. Thus it displays Fit Index scores for dissimilar occupations, as defined by O*NET. Fit Index score levels are 1–25 (low), 26–75 (medium), and 76–99 (high), as described in Chapter 5.

Table A3
Percentage of Fit Index Scores by Score Level and Occupational Similarity

Occupational Similarity	N of Scores ^a	Fit Score Level			Median Fit Score ^b
		Low	Medium	High	
Same	327	3	31	66	82.5
Similar	21,398	8	46	46	71.0
Dissimilar	288,598	22	48	30	55.0

Note. Data are from field study ($N = 327$).

^aThe number of fit score calculations.

^bBased on equally weighted occupations.

As can be seen, Fit Index scores vary considerably by level of occupational similarity. Sixty-six percent of scores based on current occupation fell in the high level, dropping to only 30 percent for dissimilar occupations. This pattern reverses for low levels of fit. This is evidence that the Fit Index score differentiates occupations in ways we would expect given the assumptions underlying the concept of occupational fit.

Another way to examine differentiation is based on fit scores themselves. If the Fit Index is valid, scores should increase with the level of occupational similarity. Fit Index scores based on the occupations of incumbent workers (the Same Occupation condition) resulted in the highest level of fit (median of 82.5). Fit Index scores based on occupations that were similar (the Same Group condition) were lower (median of 71.0), and scores based on

dissimilar occupations (the Other Occupations condition) were still lower (median of 55.0). We used Friedman’s Nonparametric Test to test the null hypothesis that the average ranks of the Fit scores were the same for the three levels of occupational similarity. This hypothesis was rejected (Chi-Square = 20.9, $df = 2$, $p < .001$), confirming that the Fit Index scores vary by level of occupational similarity. Thus the Fit Index differentiates between occupations based on similarity to current occupation—fundamental evidence of construct validity for any measure of occupational fit.

As evident in the description of the field study sample, there is a marked imbalance in the occupations represented among the participants. Over 70% of occupations represented by incumbent workers in the field study are technical in nature. Thus analyses using the original, unweighted sample would primarily show level of differentiation for technical occupations. Since we are interested in level of differentiation for *all* occupations in the sample, the above analyses were based on equally weighted occupations.

Validity Estimates

Table A4 displays observed (uncorrected) and operational (corrected) validities for the field study sample. The criteria are participant responses to items assessing satisfaction with, and commitment to, their current occupation. Two sets of criteria are shown. The first, completed by all persons in the study, consisted of a set of three general satisfaction questions (e.g., “Overall, how satisfied are you with your job?”) and a question about anticipated tenure (“How much longer do you expect to stay in this job?”). The second set of criteria, added during the course of the study, was completed by a subset of participants. The satisfaction question was focused on opportunities to do desirable work (“To what extent does your current job enable you to do the kinds of work you want to do?”), and the commitment item focused on commitment to the job (“How often do you seriously think about changing you current job?”).

Table A4
Observed and Corrected Validity Correlations

Work Attitude Criterion	Obs r	Operational Validity	
		cME	cRR
Criterion Set 1 ^a			
General Satisfaction Composite	.09	.10	.11
Anticipated Tenure	.11	.14	.16
Criterion Set 2 ^b			
Focused Satisfaction	.45	.58	.62
Job Commitment	.26	.34	.37

Note. Criterion items are discussed in the text. Obs r = observed correlation; cME = corrected only for measurement error in criterion; cRR = cME further corrected for range restriction in predictor.

^aBased on 327 persons representing 15 O*NET major occupational groups. Correlations $\geq .11$ are significant ($p \leq .05$).

^bBased on 27 persons representing 6 O*NET major occupational groups. Correlations $\geq .37$ are significant ($p \leq .05$).

Because observed validity estimates tend to be attenuated (i.e., reduced) by a variety of biasing effects, such as measurement error in the criterion and range restriction, one cannot rely on observed validity as a final estimate of the criterion validity of a test. To obtain the “true” (i.e., operational) validity of a test, psychometric techniques are used to correct for biasing effects. Therefore, we corrected the observed validities of the Fit Index shown in Table A4. First, we corrected for criterion unreliability. The reliability of the general satisfaction criterion, which was the mean of scores for three satisfaction-related items, was assumed to be .79; this assumption was based on the observed coefficient alpha. The other criteria were single-item scores; for these, we assumed reliabilities of .60 which is within the range reported by Wanous, Reichers, and Hudy (1997) in their meta-analysis of single-item measures of job satisfaction. After this correction, the observed validity of the Fit Index on general satisfaction ($r = .09$) increased to .10, and focused satisfaction ($r = .45$) increased to .58. Similar increases occurred for the tenure and commitment criteria.

Second, we corrected the validity estimates for predictor range restriction in the Fit Index scores. This range restriction occurred because the field study involved incumbent employees whose occupational fit is greater, and less variable, than the fit that would be observed in a general employee pool. In the field study, the standard deviation of the fit standard score was 0.88. In the norm sample, the standard deviation was 1.00. Therefore, we assumed a range restriction ratio (u_x) of .88. After this additional correction, the observed validity of the Fit Index on general satisfaction ($r = .09$) increased to .11, and focused satisfaction ($r = .45$) increased to .62 (see Table A4). In the same way, the observed validity of the Fit Index on anticipated tenure ($r = .11$) and job commitment ($r = .26$) increased to .16 and .37, respectively.

As noted in Chapter 3, validity estimates for occupational fit are typically small to moderate. Observed correlations between occupational fit and job satisfaction are typically about .25, with maximum correlations of .40 (Spokane, Meir, & Catalano, 2000). The observed correlations for the Fit Index are both extremely low and extremely high, probably reflecting sampling error (due to small N s) and differences in the quality of the criteria. However, the mean of these correlations is .27—quite close to results typically reported in the literature. We expect these correlations to stabilize as we conduct more studies and base our results on larger sample sizes.

Fit Score Distributions

Distributions of Fit Index scores for the 327 field study participants are shown in Figures A1 and A2 with respect to two diverse occupations: financial analysts and postal service clerks. Because scoring of the Fit Index involves combining standardized inventory results, raw Fit Index scores are not available. Therefore, relative frequency plots of standard scores are shown. For each plot, a line representing the normal distribution is also shown. Distributions of scores for most occupations are similar to those shown for financial analysts: centered near zero and normal in appearance.

Figure A1
Frequency Distribution of Fit Index Standard Scores for Financial Analysts

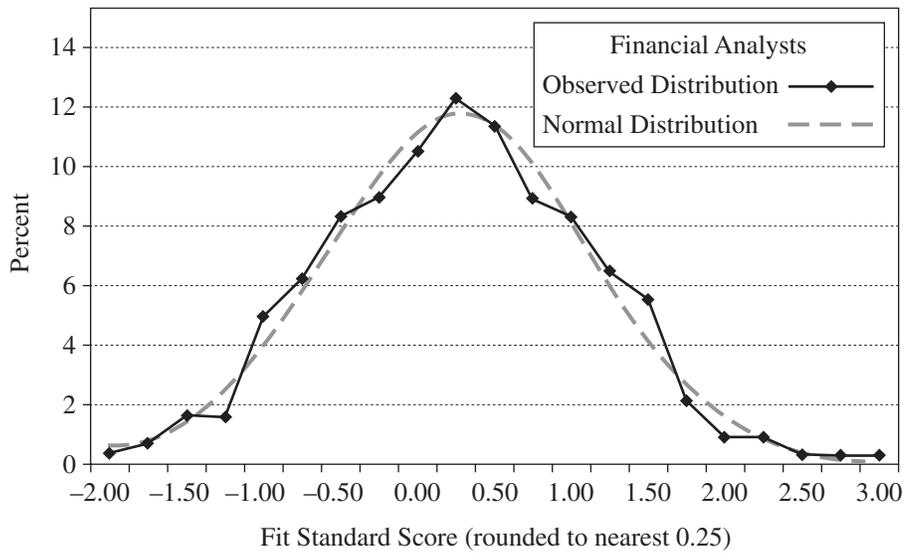
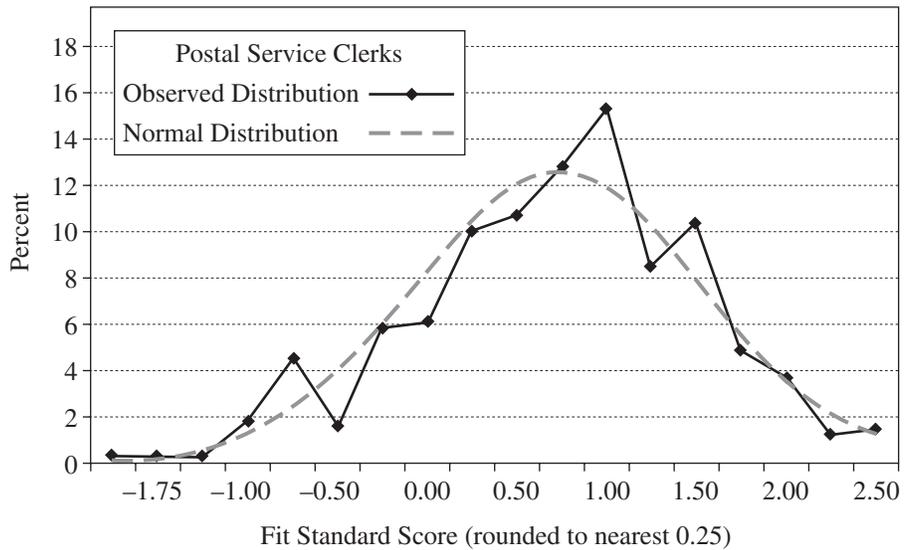


Figure A2
Frequency Distribution of Fit Index Standard Scores for Postal Service Clerks



In contrast, scores for postal service clerks vary around a mean well above zero. This reflects the nature of the field study sample. Of the O*NET major occupation groups represented in this sample, one of the larger groups was Office and Administrative Support. Although no study participants were employed as postal service clerks, many were employed in roughly similar occupations. Thus we see that Fit Index scores are higher for occupations similar to one's own, as we would expect from the results of the differentiation analyses described earlier.

Examination of Adverse Impact

Analyses were conducted to ensure that there are no indications of differential scoring by demographic subgroups. Table A5 shows mean Fit standard scores for subgroups, based on field study participant scores for their current occupation. These analyses adjust for the marked imbalances, discussed earlier, in the occupations represented among field study participants. As can be seen, there are no statistically significant differences in fit across the age, sex, and ethnicity subgroups.

Table A5
Adverse Impact Analysis for Gender, Race/Ethnicity, and Age

Variable	<i>N</i>	Adjusted Mean Fit Scores	Standard Error	<i>p</i>
Gender				.088
Male	215	1.02	0.13	
Female	110	0.83	0.14	
Race/Ethnicity				.367
Caucasian	157	0.98	0.13	
Black or Hispanic	118	0.83	0.15	
Other	41	0.86	0.18	
Age				.461
19–29	63	0.86	0.16	
30–39	103	0.88	0.15	
40–49	85	1.09	0.14	
50–59	60	0.89	0.15	
60–69	16	0.79	0.24	

Note. Means adjusted for imbalances in the occupations represented among field study participants. The *p*-value of each effect (gender, etc.) from a two-way ANOVA analysis (each demographic variable and occupation category used as effects) is represented by *p*.

Summary

This Appendix presented an overview of the development process and technical properties of the WorkKeys Fit Assessment. As described, the components of the assessment were developed using a multistep, rigorous process and were designed to work in harmony with O*NET, the nation’s primary source of occupational information. As a result, the assessment components produce reliable findings, and the Fit Index both differentiates occupations in ways that are consistent with the concept of fit and displays validity estimates consistent with those reported in the literature. The research findings presented here show that the assessment does not result in adverse impact on the basis of gender, race/ethnicity, or age.

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