Ability Explorer Professional Manual

Third Edition

Find Your Strength

by

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Introducing the Ability Explorer

The earliest career development theorist, Parsons (1909), and most after him have long singled out the importance of enhanced self-awareness of one's own abilities and the use of this information for the purpose of career guidance and counseling. As counselors have known for many years, individuals' self-awareness of abilities is fundamental to help them explore occupations and make wise, realistic decisions about their futures. The *Ability Explorer*, first published in1996, is a self-report instrument designed to help middle school/junior high, high school, and postsecondary students, as well as adults, complete a self-exploration of their abilities and relate this information to educational and/or career planning. It can be used by classroom teachers, counselors, school psychologists, job coaches, workforce development staff, or individuals wishing to learn more about themselves. This introduction will describe the instrument, its components, the 12 ability score areas measured, and the rationale for the third edition of the *Ability Explorer.*

Background, Goals, and General Description of the Ability Explorer

If an ability measure is to take its place in the mainstream of psychometric research and usefulness, it must be based on a theory of career development that has an established place in that mainstream and is applicable to a diverse group of people (Harrington & Dosnon, 2003). The *Ability Explorer* is based on principles inherent in the work of Donald E. Super, one of the major career development theorists. Super, Savickas, and Super (1996) outlined 14 career development principles or propositions. Seven of these related to abilities are operationalized through the *Ability Explorer* (Harrington & Harrington, 2002). The seven propositions are:

1. People differ in their abilities and personalities, needs, interests, traits and self-concept.
2. People are qualified, by virtue of their abilities and other traits, each for a number of occupations.
3. Each occupation requires a characteristic pattern of abilities and personality traits, with tolerances wide enough to allow some variety of occupations for each individual as well as some variety of individuals in each occupation.
4. Vocational preferences and competencies, the situations in which people live and work, and hence, their self-concepts change with time and experience, although self-concepts as products of social learning are increasingly stable from late adolescence until late maturity, providing some continuity in choice and adjustment.
5. Development through the life stages can be guided, partly by facilitating the maturing of abilities, interests, and coping resources and partly by aiding in reality testing and in the development of self-concepts.
6. The process of career development is essentially that of developing and implementing occupational self-concepts. It is a synthesizing and

compromising process in which the self-concept is a product of the interaction of inherited aptitudes, physical makeup, opportunity to observe and play various roles, and evaluations of the extent to which the results of role-playing meet with the approval of supervisors and peers.

7. Work satisfaction and life satisfaction depend on the extent to which an individual finds adequate outlets for abilities, needs, values, interests, personality traits, and self-concepts.

The above propositions demonstrate Super's developmental perspective of viewing career choice as an "unfolding process" (Super, Savickas & Super, 1996, p. 122). Savickas (2002) wrote these propositions can also be viewed as skills to be mastered and goals to be achieved in various life developmental stages, such as those specified in the new 2012 *ASCA National Model: A Framework for School Counseling Programs* at the American School Counseling Association's website (www.schoolcounselor.org) and the National Career Development Guidelines, which can be accessed at the National Career Development Association's website (www.ncda.org).

In keeping with Super's principles, the major goals of the *Ability Explorer* are to help students, as well as adults, discover and determine their potential through a self-reporting methodology and to present to individuals the relevancy of work and career-related abilities for future educational and career planning. This valuable information is provided in a hand-scored instrument which gives immediate feedback to the users. The results of the survey can be appropriately used to help teachers, transition coordinators, job placement specialists, counselors, and psychologists evaluate individuals on the full range rather than a few abilities. It can be used to help ensure that students, as well as adults, are given opportunities to discover and identify abilities previously not assessed by traditional multiple-choice aptitude tests or other work-related ability measures.

In general, the intent of the *Ability Explorer* is to provide information designed to facilitate enhanced self-awareness of work and career-related abilities and any self-efficacy issues related to the abilities in order to aid individuals with the process of educational and career exploration and career preparation.

The *Ability Explorer* provides

- Immediate feedback accomplished by a hand-scored survey booklet
- An Abilities-to-Careers Finder
- A direct alignment to the educational reform movements of *No Child Left Behind* that call for enhancing self-awareness and using information to help students make informed educational choices and career-planning decisions
- Educational and career planning information that is appropriate and valuable for job-seeking adults, former prisoners, and all students, including college-bound, non college-bound, and those at risk of dropping out of school
- A direct link to the *Occupational Outlook Handbook*(2012a) through the use of occupational titles of O*NET (2012b), the largest labor market information database available

- A list of occupations that represent most of those identified as having good employment outlooks plus careers related to popular college majors
- A direct alignment to the National Career Development Guidelines and *ASCA National Model: A Framework for School Counseling Programs*, which sets forth goals of development of career awareness, employment readiness, the acquisition of career information, identification of career goals, and application of skills in achieving career goals
- A direct alignment with the portfolio strategy

To complete the *Ability Explorer*, people rate their proficiency on 120 statements that are based on skill areas that the U.S. Department of Labor job analysts identified workers performing. The responses to 10 skill statements for each of 12 score areas are the basis of the *Ability Explorer* ability scores.

The goals of the *Ability Explorer* are to help students as well as adults learn about their work and career-related abilities, do educational and/or career exploration, develop career plans and portfolios, and begin to make the transition from school-to-careers and/or postsecondary education or training. The *Ability Explorer* is written at a Grade 8 or lower reading level and may be beneficial for students with special needs.

Ability Explorer Components

The *Ability Explorer* consists of three components:

- **Hand-Scorable Survey Booklet.** This booklet contains the statements and response options of the *Ability Explorer.* It can be hand-scored by the students or adults taking the assessment, either with or without the assistance of an administrator. It also contains a way of finding occupations related to one's two best abilities and information to help individuals explore their results further in O*NET in terms of educational and/or career planning.
- **User's Guide.** The ***User's Guide*** orients the test administrator the contents of the test, a description of what it measures, the scoring process, and how to interpret the results using the new Abilities to Careers Finder. Suggestions for further researching careers is also provided for the administrator and assessment taker.
- **Professional Manual.** This manual is a valuable resource tool designed to provide a great deal of information for interpreting the results of the *Ability Explorer*. It also provides information about the development of the *Ability Explorer*, norm tables for middle and high school and postsecondary and adult samples, and all relevant technical information including reliability and validity data.

Abilities Measured by the Ability Explorer

Through the use of the *Ability Explorer,* individuals are able to discover their potential as directly related to many important work and career-related abilities previously not assessed by existing standardized measures, which only measure 6 to 9 abilities or aptitudes. The *Ability Explorer* consists of skills and behavior statements designed to help

individuals complete a self-exploration of their abilities. An overview of the 12 work and career-related score areas of the *Ability Explorer* is provided here:

- **Artistic:** Individuals who have this ability understand and use artistic principles and methods in different ways. For example, they may draw, paint, sculpt, or take photographs. They may use their ability to decorate, design, or create products.
- **Clerical:** Individuals who have this ability are very detail-minded. They are usually very accurate in their work. Often they use their eyes, hands, and fingers at the same time to enter figures in books, on forms, and by computer.
- **Interpersonal:** Individuals with this ability communicate well with many kinds of people. They are able to be understanding, friendly, and polite in different situations. They work well with others and contribute to a group with ideas and suggestions.
- **Language:** Individuals who have this ability use spelling, grammar, and punctuation correctly when writing documents such as letters and reports and writing or reporting stories. They are able to speak clearly. They are able to understand and respond to feedback and to ask questions appropriately.
- **Leadership/Persuasive**: Individuals who have this ability can influence opinions and actions by presenting their ideas and getting people to work well together to achieve a goal. These individuals have the ability to communicate thoughts, feelings, and ideas to support a position. They can make decisions that involve large amounts of money or the safety of other people.
- **Manual/Technical:** Individuals who have this ability use their hands, fingers, and eyes together to control equipment, to adjust controls on machines, to use hand tools, or to put products together. They have the ability to read and follow instructions to operate and adjust machines and equipment, and they can spot and correct parts that are not functioning.
- **Musical/Dramatic:** Individuals who have musical or dramatic ability may understand the sounds of different musical instruments. They may have the ability to interpret roles and express ideas and emotions through body movements and the face. They might play instruments, sing, or teach or direct music. They may produce, direct, or perform in plays.
- **Numerical/Mathematical:** Individuals with numerical and mathematical ability are able to deal with practical problems in business, technology, or science by choosing correctly from different mathematical techniques. They are able to express mathematical ideas in speaking and in writing.
- **Organizational:** Individuals who have this ability know how to decide what is most important so that it is completed first and on time. They are able to organize, process, and maintain written or computerized records and other forms of information in a way that makes sense.

- **Scientific:** Individuals who have this ability apply scientific research findings to problems in medicine, the life sciences, and the natural sciences. They may use logic or scientific thinking to deal with problems or to understand or treat human and animal injuries and illnesses. Often they base their conclusions on information that can be measured or proved.

- **Social:** Individuals who have this ability use special skills to help others define and solve personal problems. They have the ability to deal well with others. Individuals who have this ability may gather and study information about others. They may work on a person-to-person basis or with groups.

- **Spatial:** Individuals with this ability are able to look at objects from one angle and know what they would look like from a different angle. They can look at a rough sketch and understand what the finished product will look like.

References to abilities measured with the *Ability Explorer* are made in the most current career-development literature, albeit sometimes under different names. For example, in a summary of 25 years of research, Prediger (1998, 2002) reported the same major ability areas as the *Ability Explorer*, except that he identified *creative/literary* as an ability having career relevance rather than *musical/dramatic,* which is used in the *Ability Explorer*. In addition, Lowman (1991) included in his literature review of the important work and career-related abilities 11 of the abilities included in the *Ability Explorer*. The three abilities not listed by Lowman were *scientific, social,* and *persuasive.* Concerning *social* and *persuasive,* he stated, "Interpersonal skills or social intelligence appears not to be a unidimensional construct" (p. 109). Lowman did, however, set forth a taxonomy of social demands that clearly differentiate interpersonal from helping skills, which require the ability to understand the behavior and feelings of others. Lowman posited that personality factors are most important in predicting sales performance. As a result, the *social* and *persuasive* domains were recognized but were not attributed as primary work and career-related abilities, and *reading* or *language* were cited among the elements found in the verbal factor. Lowman would consider *scientific* as a composite of other abilities.

Third Edition Overview

Self-ratings, self-perceptions, self-statements, or self-beliefs are valuable pieces of information in understanding oneself and for a professional helping an individual attain a goal. This component has been fully retained in the latest edition of the *Ability Explorer*. This revision resulted from an examination of feedback from test reviewers, changes within the career development field, and the authors' new ideas and work.

Step 1 and Step 2

The third edition's abilities assessment now has 120 activity statements instead of 140. This change was made for two reasons. First, users expressed a desire for more time to fit interpretations within a single administrative session. Second, the instrument now has 12 ability score areas rather than 14. The *Ability Explorer*'s reviewer Mau (2003, p. 4) wrote

> [14 abilities] increases the difficulty of comprehension because human

> cognitive capacity is limited in handling a larger number of categories. The authors need to consolidate these categories so that they are more manageable and meaningful.

The 12 ability score areas retain the objective of assessing all of one's abilities, not just some. The current scales have the same reliabilities that Mau (2009, p. 85) noted as good. (See Technical Information for all the obtained reliabilities.) The third edition differs in that the Leadership and Persuasive abilities from the second edition have been combined into one Leadership/Persuasive ability score area in the third edition. Also, the Manual and Technical/Mechanical abilities in the second edition have been combined into one Manual/Technical ability score area in the third edition.

There have been changes in scoring. The new scoring methodology has individuals tally their scores as they complete the ratings on each page in color-coded columns. The first two pages contain the first six ability scores. The curious person can see how one ability may be getting a higher score than another. The next two pages contain the second six ability scores, so there is transparency.

The Total Score chart eliminates the need for individuals to use norm tables. The numbers for each ability score represent raw scores that will be converted to percentiles and then the results are reported as high (67 to 99 percentile), medium (34 to 66 percentiles), or low (1 to 33 percentile).

An objective of the *Ability Explorer*'s descriptions of abilities is for individuals to better know what they can do well, as well as feel what their personal strengths are. The activity statements are grouped together to help define each ability. The transparency noted in scoring is carried forth in the descriptions, so words and language can be learned and used in resumes and interviews.

Step 3 and Step 4

A major addition to the third edition is the Abilities-to-Careers Finder. Each of the occupations identified by one's highest abilities needs specific information in order to make an informed decision. Compression of the assessment and scoring permitted a balance within the instrument to deliver within a single session the most comprehensive listing of ability combinations that show the related careers one could pursue with each assessed ability.

The Abilities-to-Careers Finder begins with an ability area that most individuals know about themselves, such as, "I'm good at math," or "I get along well with people." Usually people then realize that they are not sure what their second and third highest abilities are. They have not seen what happens careerwise when their best ability is combined with a second good ability. When an individual looks at a second different ability in combination with one's best ability, he or she can see the impact this has in the related occupations presented. The Abilities-to-Careers Finder offers *Ability Explorer* users combinations of one's two or three highest abilities and the occupations that use these abilities. For some combinations of abilities there are no matching occupations among the best bet jobs for employment. This is why this instrument was built on a theory that emphasized that people need to be open to possibly changing their original plans. Development of alternative abilities may be needed to reach a desired goal.

To give users confidence in this information, the authors worked with the largest known occupational database—the U.S. Department of Labor's O*NET system. The Department of Labor uses an empirical methodology to collect from employees their statements about the importance of varying knowledges across industries as to what conceptual information they need to perform their occupations. The *Ability Explorer* converted these knowledges to abilities. (See Technical Information for more information about the methodology to collect concurrent validity.)

The Research the Careers that Interest You section provides directions to obtain additional information about specific occupations. Most psychologists agree that ability and interest are independent variables with a small to moderate relationship. Therefore, it is worthwhile to consider both abilities and interests in decision making.

Outcomes

The third edition of the *Ability Explorer* achieves the following outcomes:

- Takes less time to complete. The assessment has 120 rather than 140 statements to rate.
- Assesses all the major work abilities.
- Shows relationship of abilities to specific occupations.
- Informs through the authoritative *Occupational Outlook Handbook* (OOH) and O*NET about the skills and education needed for all the jobs in which people in the United States work.
- Evaluates individuals' current status of their ability development in regards to planned career goals.
- Develops a career plan. When accompanied by the appropriate O*NET and OOH information, the *Ability Explorer* provides a career plan that many school districts and career counselors require.
- Serves as a portfolio activity. Completing the *Ability Explorer* documents that students have completed a process in self-knowledge related to educational plans.

The separate User's Guide provides directions on the administration, scoring, and interpretation of this third edition.

Developing Abilities

In order to add the Abilities-to-Careers Finder while maintaining the *Ability Explorer*'s size, some material had to be cut. Not retained in the third edition is the link between assessed abilities and various activities and courses (Steps 5, 6, 7, and 8 in the second edition). All these developmental methodologies suggest ways a person might enhance specific abilities. This material is presented here as printable worksheets and additional explanation to supplement the *Ability Explorer*.

In these worksheets, individuals will determine the degree of congruence between the two highest self-rated abilities and either school performance or activities. The focus of these two worksheets is on the highest two abilities in order to make the task less

laborious and not overwhelm younger people with a great deal of information at one time. Several appropriate goals of interpretation are

- To expose them to many abilities
- To show self-perceived best abilities
- To expose a way to support self-perceptions
- To identify potential ways to improve an ability area
- To identify self-efficacy beliefs that may impact future decisions

These worksheets are designed to be completed after the individual has completed at least Steps 1 and 2 of the *Ability Explorer*.

Develop Abilities Through Activities

The Develop Your Abilities Through Activities worksheet asks individuals to identify non-classroom activities they do or have done well that are related to their best abilities. Additionally, individuals indicate activities related to their best abilities that they have not previously tried but would like to. If anyone, and especially adults, have done other related activities to the ones listed, they can include them, provided they write them down under the correct ability.

Individuals will make an evaluative assessment about their activity performance relative to their highest self-rated abilities:

- Six to eight checked activities indicate the individual's performance in that ability area was good or very good and would yield a high rating.
- Three to five checked activities yields a medium rating.
- Zero to two checked activities yields a low rating.

In doing this exercise, the individual is completing a profile to show the degree of congruence between his or her best self-ability ratings and related activities. Also indicated are activities that might improve one's abilities or increase one's confidence in an ability area. This worksheet also asks for a separate rating of reading ability as it is a foundational ability required in most jobs.

Develop Your Abilities Through Activities

Fill in your highest and second highest abilities from page 6 of the *Ability Explorer*:

Highest: _____ Second highest: _____

Read the lists of activities below for these two abilities, and then follow these steps:

1. Put a check mark next to an activity if you have done the activity, and you think you have done it well or very well.
2. Draw a circle around an activity if
    - You have never done the activity and would like to try it.
    - You have done the activity, but not very well, and would like to do it better.

Artistic

- ❑ Made or decorated clay or ceramic objects
- ❑ Did arts and crafts
- ❑ Made jewelry
- ❑ Created posters
- ❑ Drew, painted, or sketched pictures
- ❑ Mounted and framed art
- ❑ Carved designs in wood
- ❑ Recognized the style of famous painters

Clerical

- ❑ Collected money for a club or school event and kept records
- ❑ Checked papers or reports for mistakes
- ❑ Compared credit charges with billing statements
- ❑ Answered questions by e-mail and phone
- ❑ Completed order forms
- ❑ Filed papers
- ❑ Used a computer
- ❑ Kept score for sports events

Interpersonal

- ❑ Worked at a school event
- ❑ Been a member of a panel discussion
- ❑ Volunteered for an organization
- ❑ Tutored someone

- ❑ Been involved in a club
- ❑ Participated in an online discussion group
- ❑ Played on a sports team
- ❑ Took care of children

Language

- ❑ Entered an essay or a short story in an essay contest
- ❑ Wrote poems or stories
- ❑ Kept a diary, blog, or journal
- ❑ Created an advertisement
- ❑ Gave a speech before a group
- ❑ Kept a portfolio of papers
- ❑ Learned a different language
- ❑ Did crossword puzzles

Leadership/Persuasive

- ❑ Led a committee
- ❑ Served as an officer of a group
- ❑ Coached a team
- ❑ Led a group activity
- ❑ Gave a speech to convince people about an idea
- ❑ Raised money for a club or organization
- ❑ Sold a product or service
- ❑ Debated a topic

Manual/Technical

- ❑ Picked fruit or vegetables
- ❑ Helped paint a room or house
- ❑ Camped, hiked, or fished
- ❑ Helped fix a car
- ❑ Put together unassembled merchandise
- ❑ Repaired a bicycle
- ❑ Maintained or upgraded a computer
- ❑ Showed someone how a machine works

Musical/Dramatic

- ❑ Took singing or music lessons
- ❑ Wrote a song
- ❑ Read music
- ❑ Performed in a choir
- ❑ Played in a band or orchestra
- ❑ Entertained at parties or school events
- ❑ Acted in a play
- ❑ Been a member of a dance group

Numerical/Mathematical

- ❑ Kept a record of earnings from your job
- ❑ Used software to create a spreadsheet
- ❑ Figured sports teams' or players' averages
- ❑ Shopped for the best buys
- ❑ Balanced a checkbook
- ❑ Understood financial news reports
- ❑ Set up a weekly budget
- ❑ Kept a bank account

Organizational

- ❑ Planned a project
- ❑ Scheduled a school or community event
- ❑ Organized group activities
- ❑ Been in charge of equipment or schedules for a team
- ❑ Knew the rules of a sport well enough to referee
- ❑ Set a goal and followed a plan for it
- ❑ Arranged your schedule to feed a pet
- ❑ Followed a recipe and prepared food for someone

Scientific

- ❑ Grew plants, flowers, or vegetables
- ❑ Understood details about scientific expeditions
- ❑ Raised or trained animals
- ❑ Participated in an environmental group
- ❑ Used first aid

- ❑ Did science projects
- ❑ Entered a science fair
- ❑ Used a microscope or other laboratory instruments

Social

- ❑ Volunteered or worked in a hospital, nursing home, or daycare center
- ❑ Helped someone with disabilities
- ❑ Taught someone how to read
- ❑ Worked as a teacher's helper
- ❑ Took care of a sick relative or friend
- ❑ Helped out in a library
- ❑ Taught someone to swim
- ❑ Attended religious services

Spatial

- ❑ Made or used a pattern for a piece of clothing
- ❑ Created a new hairstyle
- ❑ Drew buildings or houses
- ❑ Drew maps including roads and towns
- ❑ Used blocks to make a design
- ❑ Built or designed a table or other piece of furniture
- ❑ Drove a boat and docked it at a pier
- ❑ Designed a model of a car

Your Activities/Abilities Chart

Fill in the following chart, following these guidelines:

- In the first column, write your two highest rated abilities and any other abilities that you are interested in developing.
- In the second column, write activities related to those activities that you checked off that you think that you have done the best in or other unlisted activities related to those abilities that you have done well in.
- In the third column, write activities related to those activities that you circled that you are most interested in trying or doing better in or other unlisted activities related to those abilities that you are interested in doing.

Ability	Related Activities You Did Best In	Related Activities to Try or Do Better In

Rate Your Reading Ability

How do you rate your reading ability? Circle one:

High Medium Low

Reading is an important ability that is required in most jobs. If you need to improve your reading ability, talk to a teacher or counselor. If you think you have a good reading ability, continue to develop it by reading more.

Create Your Ability Profile

Fill in your highest and second highest abilities from page 6 of the *Ability Explorer* at the top of the following charts. Checkmark your self-rating for the two abilities: high, medium, or low.

For the Activities row in the following charts, checkmark High if you checked 6 to 8 activities for this ability. Checkmark Medium if you checked 3 to 5 activities. Checkmark Low if you checked 0 to 2 activities.

Highest ability: _____

	High	Medium	Low
Self-rating for ability			
Activities			

Second highest ability: _____

	High	Medium	Low
Self-rating for ability			
Activities			

- If your activities have the same or mostly the same ratings as your best abilities, you can be confident that these are your strong ability areas.
- If your activities have lower ratings than your highest abilities, return to the activities list to find other activities that may help you improve your performance in an ability that you rated high.
- If your activities have higher ratings than your highest rated abilities, you may not have enough experience to judge your abilities. Ask yourself why you do so well in activities yet think others have greater ability. Talking with a friend, teacher, or counselor may help you understand yourself better.

Develop Abilities Through Courses

The Develop Your Abilities Through Courses worksheet asks individuals to identify courses taken related to their abilities. Here they would also indicate courses they want to take that are related to their best abilities. This information is part of an educational plan, especially an individual's transition to high school, postsecondary program, or college.

Individuals will need to average their grades to assess congruence with their self-rated abilities:

- A high rating for designated courses related to an ability area would result if the individual's averaged grades were A or B.
- A medium rating would result from averaged grades of C.
- A low rating would result if the averaged grades were D or F.

Develop Your Abilities Through Courses

Read through the following list of courses or subjects that you may have taken and follow these steps:

1. If you have taken the course, circle the grade you earned.
2. If you have not taken the course but would like to take it, draw a circle around the course name.

Artistic

Painting	A B C D F
Drawing	A B C D F
Graphic Arts/Design	A B C D F
Photography	A B C D F

Clerical

Keyboarding	A B C D F
Office Practices	A B C D F
Word Processing	A B C D F

Interpersonal

Communications	A B C D F
Psychology	A B C D F
Speech	A B C D F
Languages	A B C D F

Language

English	A B C D F
Speech	A B C D F
English Composition	A B C D F
Creative Writing	A B C D F
Languages	A B C D F
Literature	A B C D F
Journalism	A B C D F

Leadership/Persuasive

Hotel Management	A B C D F
Political Science	A B C D F
Food Management	A B C D F

Business Administration	A B C D F
Government	A B C D F
Marketing	A B C D F
Principles of Selling	A B C D F
Communication	A B C D F
Speech	A B C D F
Merchandising	A B C D F
Manual/Technical	
Physical Education	A B C D F
Agriculture	A B C D F
Cooking	A B C D F
Food Preparation	A B C D F
Building Trades	A B C D F
Landscaping	A B C D F
Auto Body Repair	A B C D F
Carpentry or Woodworking	A B C D F
Plumbing	A B C D F
Radio/TV Production	A B C D F
Automotive Technology	A B C D F
Welding	A B C D F
Machine Shop	A B C D F
Musical/Dramatic	
Drama	A B C D F
Vocal Music	A B C D F
Instrumental Music	A B C D F
Dance	A B C D F
Numerical/Mathematical	
Applied Mathematics	A B C D F
Basic Math	A B C D F
Trigonometry	A B C D F
Business Math	A B C D F
Accounting	A B C D F

Algebra	A B C D F
Computer Programming	A B C D F
Economics	A B C D F
Calculus	A B C D F
Bookkeeping	A B C D F
Organizational	
Finance	A B C D F
Business Law	A B C D F
Data Processing	A B C D F
Civics	A B C D F
History	A B C D F
Scientific	
Biology	A B C D F
Earth Science	A B C D F
Medical or Dental Technology	A B C D F
Environmental Science	A B C D F
Chemistry	A B C D F
Engineering	A B C D F
Forestry	A B C D F
General Science	A B C D F
Health	A B C D F
Physics	A B C D F
Horticulture	A B C D F
Animal Science	A B C D F
Social	
Child Care	A B C D F
Nursing Care	A B C D F
Sociology	A B C D F
Social Sciences	A B C D F
Spatial	
Textiles and Clothing	A B C D F
Geometry	A B C D F

Geography	A B C D F
Mechanical Drawing	A B C D F
Drafting/CAD	A B C D F
Haircutting and Styling	A B C D F
Fashion Design	A B C D F

Your Courses/Abilities Charts

In the first column of the following chart, write the courses you think were your best ones. Use your grade information to make these decisions. In the second column, write the abilities related to your best courses.

Courses You Did Best In	Related Abilities

In the first column of the following chart, write the courses you circled and are most interested in taking. In the second column, write the abilities related to the course you want to take.

Courses You Want to Take	Related Abilities

Create Your Ability Profile

Fill in your highest and second highest abilities from page 6 of the *Ability Explorer* at the top of the following charts. Checkmark your self-rating for the two abilities: high, medium, or low.

For the Course grades row in the following charts, checkmark High if your average grades are A or B in courses for this ability. Checkmark Medium if your average grade is C in courses for this ability. Checkmark Low if your average grades are D or F in courses

for this ability. Leave the rating box empty if you have not taken any courses in this ability area.

Highest ability: _____

	High	Medium	Low
Self-rating for ability			
Course grades			

Second highest ability: _____

	High	Medium	Low
Self-rating for ability			
Course grades			

- If your grades have the same or mostly the same ratings as your best abilities, you can be confident that these are your strong ability areas.
- If your grades have lower ratings than your highest abilities, return to the courses list to find other activities that may help you improve your performance in an ability that you rated high.
- If your grades have higher ratings than your highest rated abilities, you may not have enough experience to judge your abilities. Ask yourself why you do so well in courses yet think others have greater ability. Talking with a friend, teacher, or counselor may help you understand yourself better.

Possible Uses for the Ability Explorer

The contents of this section show how to use the *Ability Explorer* as part of a comprehensive career guidance and counseling program.

Using the Ability Explorer with a Career Portfolio

While the *Ability Explorer* is a self-measure of abilities, the career portfolio could be considered a self-measure of abilities, interests, accomplishments, and values. They are both tools for self-evaluation, especially as the process relates to career exploration, planning, and decision making. The *Ability Explorer* complements the purpose and aim of a career portfolio.

Just as the individual should use a career portfolio to record what is best about him or her, so the *Ability Explorer* profile report is a record of what the person considers his or her strongest abilities. This information can become an integral part of the portfolio. In addition, the *Ability Explorer* activities guide the individual in an exercise of career exploration and/or planning. In a broader sense, this is exactly the purpose of the career portfolio. Thus, the completed *Ability Explorer* activity can become part of the portfolio while it reinforces the portfolio's intended use.

The self-evaluation encouraged by both the *Ability Explorer* and the career portfolio helps students and adult clients develop maturity relative to career planning and decision-making. In a world in which individuals are expected to change jobs and even careers several times throughout their lives, self-evaluation becomes critical in making proper decisions. The student or adult client must be able to self-evaluate in order to make the best career choice possible at a given time, asking, in part, "What are my best abilities, and which careers are best suited to those abilities?" He or she must also be able to self-evaluate when pursuing a career choice, such as developing a strong resume or presenting his or her best talents during an interview. A good career portfolio provides means or tools for career planning so that career goals can be achieved. Likewise, the *Ability Explorer* provides information on activities and courses that can develop one's abilities, as well as careers that relate to them.

The Ability Explorer as a Tool for Writing Resumes and Personal Statements

Most career portfolios include a resume. The *Ability Explorer* is a useful tool for developing a functional resume based, at least in part, on abilities. The individual's highest rated abilities can be highlighted in the resume, perhaps as a section heading in the body of the resume. In addition, if the individual has done well in activities and courses that relate to these abilities, these pieces of information can be used as evidence for the abilities.

In addition to resumes, personal statements are often required by postsecondary education or training programs. In a way similar to the construction of the body of the functional resume, the personal statement can be written by using the highest rated abilities and the related activities and courses that the individual did well in. In addition, the part of the personal statement that discusses areas that the student or adult client

would like to develop (if this is required) can refer to abilities that were not rated as highly, but which the individual is interested in developing.

Using the Ability Explorer Results in Practice Interviews

Because the *Ability Explorer* is a self-report measure, it is an ideal tool to use when practicing job or informational interviews, often another component to the career portfolio strategy. In essence, the *Ability Explorer* assessment process mimics the interview process. The *Ability Explorer* starts with a series of questions and ends with what the individual has to say about him or herself. The counselor or teacher can extend this further by allowing the individual to reflect upon his or her *Ability Explorer* results during a counseling session. This encourages the student or adult client to articulate his or her best strengths, a skill that can certainly make for successful interviews. The individual's peers and/or parents or guardians could also be encouraged to participate in "interviews" focused on his or her *Ability Explorer* results.

Even if the individual has a number of low self-ratings on the *Ability Explorer*, a dialogue about those results in a counseling session should give the person the opportunity to discuss where his or her strengths might lie, or at least prepare the person to answer an interviewer's query as to weaknesses. A goal should be to have the student or adult client able to articulate his or her strengths in an interview session.

Using the Ability Explorer with Career Information

The names of the occupational titles in the *Ability Explorer* are compatible with the occupational titles used in the *Occupational Outlook Handbook* (*OOH*) and the O*NET database developed by the U.S. Department of Labor (accessible at www.onetonline.org). The *OOH* is updated every two years and is provided online at www.bls.gov/oco/. JIST Publishing publishes a print version of the *OOH,* which is available at most libraries and school counseling departments.

Individuals will evaluate their abilities further as they learn more about what a worker does in a specific career and the type, length, and cost of preparation for entry into the field. The wages earned and the prospects for employment typically are also determinants in a person's decision-making process.

Technical Information

Each statement of the *Ability Explorer* is directly related to one of the work and career-related abilities identified in the U.S. Department of Labor's *Guide for Occupational Exploration* (GOE) (1979). Job analysts identified these work and career-related abilities as they examined workers' capabilities, which included areas of educational development, aptitude, and job knowledge. Each activity was written to represent an ability-related activity that individuals at middle and early high school grades and adults are likely to engage in. Statements of activities are, in essence, microskills of a larger ability area. Initially over 550 skill statements were written. The authors were also careful to write ability statements that would reflect activities familiar to both females and males, different ethnic and racial groups, and cover specific ability areas. Prior to a large field tryout, earlier versions of the *Ability Explorer* were guided by reading analyses and

comments by students from inner city, as well as Greater Boston area schools and adult programs for the unemployed. After Riverside Publishing Company staff reviewed and edited the statements, they were assembled into a field-test form with more statements than were needed and administered to approximately 8,100 students.

Each item's frequency distributions by gender**,** grade, and culture/race from the National Research Study were also studied, as were an item's correlation with its own scale, as well as, with each of the other scales.

With a tryout sample of 3,414, 93 percent of the items correlated with its own scale .50 or higher. The additional items were .46 or above. Twenty three (16 percent) of the total ability items had a rating of "very poor." The gender breakdown was 11 percent of the 1,660 males and 19 percent of the 1,754 females. Excluding those items with high ratings of "very poor", items indicating higher levels of ability were reported by 72 percent American Indians; 99 percent Asian/Pacific Islanders; 82 percent Black/African American; 81 percent Hispanic; and 81 Whites, not of Hispanic origin. Table 1 shows sample sizes and mean ability scores.

Table 1 National Research Study Mean Ability Score by Grade

Grade	Artistic	Clerical	Interpersonal	Language	Leadership	Manual	Musical/Dramatic	Numerical/Mathematical	Organizational	Persuasive	Scientific	Social	Spatial	Technical/Mechanical
9	39.9	44.0	46.5	42.0	42.7	39.9	40.0	39.8	43.9	41.5	36.6	45.2	42.8	38.4
10	38.2	44.7	46.7	41.3	43.3	39.6	39.0	40.5	44.3	41.1	36.1	44.9	42.8	37.8
11	38.5	45.7	47.3	42.3	43.9	39.7	38.9	41.3	44.9	41.7	36.2	45.2	43.3	38.0
12	38.6	46.0	48.1	41.8	44.4	39.7	38.4	40.5	45.3	41.8	36.2	45.8	42.9	37.9

Grade 9 (n) = 439	Grade 11 (n) = 833
Grade 10 (n) = 945	Grade 12 (n) = 518

In Table 1 little variability occurred across grade levels in the areas of art, language, manual, music, math, science, and technical. Quite remarkable was the lowest of the 14 rated abilities, scientific, which was rated almost identically across four grade levels. Janko (1995) used 10 of the 14 *Ability Explorer* abilities and found no difference between grade 9 and grade 12 students' capability to self- rank their abilities accurately in comparison to ability test scores of the same name. No significant changes occurred between the correlations of self-ranked abilities with ability test scores for grade 9 and grade 12 students.

Readability

It is very important that individuals taking the *Ability Explorer* are able to read and understand each statement. As a result, the reading level of the *Ability Explorer* statements and directions were carefully checked. The statements and directions in the first edition were written at fifth grade level or below. The statements for the third edition of *Ability Explorer* were written at fifth grade reading level or below as well, though the overall reading level of the assessment including instructions is at the eighth grade level or below. The reason for the increase in reading level is the inclusion of occupational titles which are longer and are usually more complex words.

Reading checks were first done using the *Right Writer Program.* In further analyzing the statements and directions, each word of the *Ability Explorer* was then assigned a vocabulary grade level, as noted by one of the following sources: *EDL Core Vocabularies* (Taylor, et al., 1989) and the *Basic Elementary Reading Vocabularies* (Harris & Jacobson, 1982). Words were eliminated that were above the fifth grade reading level and rewritten in simplified language.

Study for Bias

All statements, as well as the directions, were carefully reviewed by a panel of minority experts. In an attempt to make the *Ability Explorer* as free of bias as possible, the authors, along with measurement experts, editorial specialists, and psychologists from the publisher, submitted the *Ability Explorer* to a panel of minority educators whose task was to eliminate sources of racial, gender, cultural, or ethnic bias. Before evaluating the *Ability Explorer* for bias, the panel met with the authors and the publisher in order to obtain an understanding of the instrument and to receive training on how to look for and identify possible areas of bias. The panel members were then asked to read and evaluate each item of the *Ability Explorer*, as well as the directions. Members of the panel then informed the authors and the publisher of any word or statement believed to be stereotypic in nature. Any statement that reflected racial, gender, cultural, or ethnic bias was eliminated or rewritten to remove the potential bias.

Members of the *Ability Explorer* Bias Panel

Dr. Lynn Brandon, Coordinator of Guidance and Counseling and Social Work, DeKalb County Schools, Decatur, Georgia

Mr. Lester Gaines, Director of Guidance, Chicago Public Schools, Chicago, Illinois

Ms. Lupita Garcia, Counselor, Carroll High School, South Lake, Texas

Ms. Monica Gnirs-Nuques, Advisor, Los Angeles Unified School District Division of Adult and Career Education, Los Angeles, California

Ms. Lynn Hollandsworth, Counselor, Lafayette Winona Middle School, Norfolk, Virginia

Ms. Marge Mastie, Supervisor of Assessment Services, Washtenau Intermediate School District, Ann Arbor, Michigan

Dr. Jeanne Miyasaka, Research Specialist, Richland School District #1, Columbia, South Carolina

Mr. David Parr, President, St. Louis Suburban School Counselors Association, St. Louis, Missouri

Mr. Greg Shipp, Educational Specialist, Region #6 Education Service Center, Huntsville, Texas

Dr. Laura Ward, President, American Vocational Association/ Guidance Division

Dr. David Whitehorse, Director of Professional Programs, College of Education, California State University, San Marcos, California

Mr. Elias Zambrano, Head Counselor, Anson Jones Middle School, San Antonio, Texas

Demographic Characteristics of the Sample and Standardization

The *Ability Explorer* was normed on a sample of 9,730 students (grades 6–12) in 24 schools during 1995 in 13 states: Alabama, California, Florida, Illinois, Kansas, Massachusetts, Minnesota, Mississippi, New Jersey, South Dakota, Texas, Virginia, and Wisconsin. It was also normed on a sample of 1,305 students in 11 four-year and two-year colleges and in two adult learning centers during 1997 in 11 states: California, Illinois, Iowa, Kansas, Massachusetts, Minnesota, Mississippi, Nebraska, New York, Pennsylvania, and Texas.

The norm group for the *Ability Explorer* contains 4,837 cases with 3,532 middle/junior high and high school students and 1,305 college students and adults. The middle/high school norms include: 93 in grade 7, 704 in grade 8, 439 in grade 9, 945 in grade 10, 833 in grade 11, and 518 in grade 12. The gender distribution for all students tested was 51.4% female and 48.6% male. The race/ethnicity was less than 1% American Indian; 2% Asian/Pacific Islander; 28% Black/African American; 15% Hispanic; and 54% other. The over-weighting of Black/African American students is explained below.

The *Ability Explorer* was administered nationally to junior high and senior high school samples chosen on the basis of grade, gender, and race/ethnicity (See Tables 2 and 3). The sampling design represented various sections of the country as well as urban, suburban, and rural populations with adequate representation of ethnic groups. Younger students in grade 7 were over-weighted in the sample to ascertain if they had sufficient experience with the items based on work activities. African Americans were over-represented to examine whether young members of a cultural/racial group had sufficient experience on which to base their evaluation of items. The *Ability Explorer* was administered along with the reading subtest of the *Tests of Achievement and Proficiency* (TAP). The achievement level of students showed their self-reported grades to be appropriately distributed based on national reading test norms. Females outperformed males in grades which also was verified in student self-reports.

The characteristics of the sample with regard to gender, race/ethnicity, and achievement level are reported as percentages in Table 2. Table 3 reports the sample's race/ethnicity, achievement level, future education plans, and grade by gender. Student aspirations for both two-year and four-year college attendance was fairly equivalent with the 70.1 % of U.S. high school graduates continuing on to postsecondary education (National Center

for Education Statistics, Fast Facts, 2012).

Table 2 Demographic Characteristics of Normative Sample Middle/High School Students

Characteristics	Percentage of Sample (N=3532)	Percentage of U.S. Population
Gender *		
Male	49	49
Female	51	51
Race/Ethnicity **		
American Indian	<1	1
Asian/Pacific Islander	2	5
Black/African American	28	17
Hispanic	15	24
Other	54	53
Achievement Level of Students		
A's & B's	36	NA
B's & C's	42	NA
C's & D's	19	NA
D's & F's	3	NA

NA = not appropriate

*U.S. Census Bureau, Quick Facts, 2012, Washington, DC: Author.

** National Center for Statistics, Projections of Education Statistics to 2019, Table 3, 2012, Washington, DC: Author.

Table 3 Stratification by Gender of Selected Sample Characteristics: Middle/High School Students

Characteristics	Percentage of Males (N = 1691)	Percentage of Females (N=1789)	Percentage of U.S. Population *
Race/Ethnicity *			
American Indian	<1	<1	1
Asian/Pacific Islander	3	2	5
Black/African American	26	29	17
Hispanic	15	14	24
Other	55	54	53
Achievement Level of Students			
A's & B's	30	42	NA
B's & C's	43	41	NA
C's & D's	23	15	NA
D's & F's	4	2	NA

Future Education Plans			*Combined 2 & 4 Year***
Two-Year Community College	9	13	Males: 66.0 %
Four-Year Community College	50	59	Females: 73.8%
Vocational/Technical School Program	6	4	NA
Apprenticeship Training Program	1	<1	NA
Military	8	3	NA
Undecided	21	16	NA
Missing	5	4	
Grade			
7 (n = 93)	2	3	NA
8 *(n* = 702)	20	19	NA
9 *(n* = 428)	13	11	NA
10 (*n* = 932)	27	26	NA
11 *(n* = 817)	24	23	NA
12 *(n* = 508)	12	16	NA
Missing *(n*=52*)*			

NA = not appropriate

[a] National Center for Education Statistics 2012, Projections of Education Statistics to 2019, Table 3, Washington, DC, .Author.

**National Center for Education Statistics, 2012, Fast Facts, Percentage Enrolled in College Following High School Completion, Washington, DC Author.

The Ability Explorer and Gender, Race, and Ethnicity Fairness

The *Ability Explorer* uses a single, large, well-diversified, and non gender-specific norm group. The focus of the *Ability Explorer* is on what abilities are needed to perform an occupation, not the abilities for males performing an occupation or females performing the same occupation. The source of the activities on the instrument was job analysts' findings. These job analysts looked at the abilities and skills needed to do a job, as opposed to whether a male or female, Black or Hispanic, etc. used different abilities to do the same job. As noted earlier in this manual, questions were examined to seek the best balance of gender and race/ethnicity for the respective scales.

Individuals are asked to rate their ability to do 120 statements that describe activities on a scale that ranges from 6 (very good) to 1 (very poor). Therefore, the highest possible raw score for any ability is 60 and the lowest is 10. At the end of this manual you'll find the separate norm tables for the ability self-ratings for junior/middle and high school students, college students, and adults. Means, standard deviations, percentiles, and *T*-scores are included in the norm tables.

Reliability

Scale Homogeneity

Internal consistency reliability demonstrates the extent to which items correlate with one another, and it was computed using Cronbach's (1951) coefficient alpha method. Coefficient alphas were calculated for ability scales using data from the normative sample. The coefficients for the abilities are reported in Table 4 The coefficients were averaged using the Z-transformation technique. The average figure is listed at the bottom of the table. The median coefficient for abilities was .87, with a range of .84 to .89. No gender difference for the coefficients was noted. These results indicate good internal consistency reliability.

Table 4 Coefficient Alpha Reliabilities, Scale Means, and Standard Deviations for Ability Scales for Middle/High School Students

	Alpha			Scale Means			SD
Scale	Male N=1691	Female N=1789	Total N=3480	Male N=1691	Female N=1789	Total N=3480	
Artistic	0.88	0.88	0.88	38.14	39.90	39.02	10.17
Clerical	0.83	0.85	0.86	43.01	46.27	44.64	8.11
Interpersonal	0.87	0.86	0.87	44.85	48.45	46.65	8.35
Language	0.87	0.86	0.87	39.97	43.29	41.63	8.96
Leadership/Persuasive	0.86	0.88	0.88	41.62	43.24	42.43	8.77
Manual/Technical	0.85	0.86	0.87	45.23	37.65	41.44	9.17
Musical/Dramatic	0.87	0.87	0.87	38.17	40.41	39.29	10.17
Numerical/Mathematical	0.90	0.89	0.89	41.58	39.22	40.40	9.66
Organizational	0.85	0.85	0.85	43.33	45.42	44.36	8.05
Scientific	0.86	0.88	0.88	38.15	34.71	36.43	9.64
Social	0.86	0.86	0.88	41.30	48.26	44.78	8.97
Spatial	0.84	0.85	0.84	43.12	42.09	42.65	8.50
Overall Mean	0.86	0.87	0.87	41.53	42.41	41.97	9.04
Median	0.86	0.86	0.87	42.32	42.69	42.14	9.07

Table 4 also includes the ability scales' means and standard deviations. The overall mean for males was 41.53 and 42.41 for females. The median mean for males was 42.32 and

42.69 for females. Historical patterns occurred on scales with gender differences: Social and Interpersonal were higher for females, and Manual /Technical were higher for males.

Retest Reliability

To examine the retest reliability of self-ratings of abilities, earlier published machine-scored and Internet versions containing identical items were administered to 73 freshmen and sophomores at a large Texas public university. These students (21 males and 52 females) had yet to declare a major. Their mean scholastic aptitude test (SAT) score was 1,108--approximately the 62nd percentile on national norms--and their mean GPA was 2.66. As a measure of socioeconomic status, the total years of education for their mothers and fathers were between a two-year and four-year degree. The instruments, administered within two weeks of each other, resulted in mean retest Pearson Product-Moment correlations of Abilities .84 as reported in Tables 5. Martinez (2002) indicated the results confirmed the instrument's stability over a period of time.

Table 5: Retest Correlations, Means, and Standard Deviations for Abilities After Two Weeks (N=73)

		1st Administration		2nd Administration	
Abilities	R	M	SD	M	SD
Artistic	0.84	37.44	10.15	39.38	9.81
Clerical	0.77	47.53	6.10	47.49	5.87
Interpersonal	0.82	51.44	6.24	50.51	6.74
Language	0.90	44.70	7.48	45.34	7.54
Leadership/Persuasive	0.82	47.22	6.95	47.52	7.12
Manual/Technical	0.84	36.95	9.66	38.09	8.62
Musical/Dramatic	0.85	38.77	8.83	40.26	8.35
Numerical/Mathematical	0.85	39.36	9.44	41.12	8.99
Organizational	0.81	47.10	6.27	47.19	6.64
Scientific	0.84	34.82	9.44	36.71	8.67
Social	0.88	47.77	7.25	48.68	7.21
Spatial	0.85	43.44	7.84	44.62	7.55
Overall Mean	0.84	43.05	7.97	43.91	7.76
Median	0.85	46.20	7.66	44.98	7.55

Scorer Reliability

Clerical errors can be a source of error in scoring. Scorer error can be reduced

considerably by the availability of clear administration procedures and detailed guidelines governing scoring. To demonstrate statistically the amount of error due to differences in scoring, the authors conducted a study of 170 grade 8 students, 87 males and 83 females. The sample consisted of an entire grade of a middle-class suburban Boston community. Pearson Product-Moment correlation coefficients were computed for student-calculated scores and author-calculated scores. The median correlation was .98 as reported in Table 6. This high correlation is indicative that the *Ability Explorer* has accurate self-scoring capability. However, despite the high correlation indicating an index of agreement, 8 percent of the total sample made errors that would have changed their results. While this percentage is small, it is a reminder that administrators need to exercise some caution. Good administration practice dictates that the administrator circulate through the group during the assessment, making sure that students understand the scoring directions. In a separate analysis, no pattern was observed that errors were associated with a student's achievement level.

Table 6 Correlations Between Student-Calculated and Author-Calculated Scores (N=170) (Decimals Omitted)

	Student Scored		**Author Scored**		
Scales	**M**	**SD**	**M**	**SD**	**r**
Artistic	39	10	39	10	98
Clerical	42	8	42	8	97
Interpersonal	48	8	48	8	95
Language	42	8	42	8	99
Leadership/Persuasive	43	8	44	8	98
Manual/Technical	41	10	41	10	99
Musical/Dramatic	37	10	37	10	98
Numerical/Mathematical	41	11	41	11	99
Organizational	43	8	44	8	99
Scientific	38	10	38	10	97
Social	44	9	44	9	98
Spatial	44	9	44	9	99
Mean	**42**	**9**	**42**	**10**	**98**

Validity

Three types of validity will be presented in this section: content-description or content validity; construct-identification or construct validity; and criterion-prediction or criterion-related validity.

Content-Description Validity

Anastasi and Urbina (1997) describe content-description validity as follows: "Content-description validation procedures involve the systematic examination of the test content to determine whether it covers a representative sample of the behavior domain to be measured" (pp. 114-115). Obviously, this kind of validity has to be built into the test at the time the scales are conceptualized and items constructed.

The Rationale of the Ability Explorer

The *Ability Explorer* implements the developmental perspective and ability self-concept constructs set forth in Donald Super's theory of vocational development (Super, Savickas, & Super, 1996). Chapter 1 specified the theoretical propositions that the *Ability Explorer* implements. Imbedded in these propositions is the reality testing rationale for the inclusion of an interpreter seeking out data that corroborates self ratings. Goldman (1972) suggested that: "The main contribution of tests in counseling is not making predictions (which may be very weak) but facilitating the clarification of self-concept" (p. 219). Knowledge of one's abilities as distinct from interests is valuable information in career planning. Opportunities for focused feedback or positive reinforcement to promote the development of abilities are often random, non-systematic, and many times not sensitive to self-efficacy beliefs. The procedure which triggers self-introspection, in the case of the *Ability Explorer*, is the summarizing and examining of the relationships between skills, abilities, activities, and academic knowledge related to work performance which O*NET provides.

The developmental focus of the *Ability Explorer* is consistent with psychology's strength-based counseling model and multiple intelligences research. Smith (2006) noted that psychology is moving to a strength perspective and away from focusing on weaknesses. Sternberg (1996), a distinguished researcher on intelligence, denigrated the worthiness of the low validity coefficients between traditional cognitive-ability tests and measures of job performance, while extolling the attributes of Successfully Intelligent People (SIP). SIP people probably would score high on the *Ability Explorer* self-ratings in Sternberg's descriptions because they know how to make the most of their abilities, motivate themselves, and have a reasonable level of self-confidence and belief in their ability to accomplish their goals, all of which are consistent with the *Ability Explorer's* envisioned outcomes.

Researchers also have advocated a separation of the ability and interest domains of behavior. Strong (1943) expressed the belief that "abilities should be measured directly and not by interest tests" (p. 24). Swanson (1993) concluded that self-ratings of abilities, interests, and skills are sufficiently distinct to be considered separate constructs worthy of independent assessment based on the results of principal components and correlational and regressional analyses. Naylor and Krumboltz (1994) also concluded that aptitudes, interests, and career beliefs are independent. Austin and Hanish (1990) concluded that

abilities are more fundamental to occupational choice than interests. In a longitudinal study, they found ability data contributed more than interest data toward predicting occupational attainment among 13,248 students 11 years after high school. In researching Barak's theory, which holds that interests are a function of perceived ability, Hall, Kelly, Hansen, and Gutwein (1996) wrote: "Changing perceptions of ability may be the most powerful vehicle for changing interests" (p. 332).

Regarding the stability and power of ability, in an older study Froelick (1954) had his subjects self-rate themselves on 17 abilities, interests, and personality characteristics before and after taking an extensive battery of related tests. Very few significant changes in self-ratings were found, and the conclusion was that taking tests in and of itself does not influence self-description. Considering the belief in the 1950s regarding the power and influence of tests, on reflection a better conclusion might be that self-beliefs are stable and possibly hard to change.

The *Ability Explorer* assesses self-perceptions of skills, competencies, and abilities. It is not a substitute for aptitude tests or an interest inventory. It follows an open architecture where questions related to the assessment and scoring of self-ratings are readily apparent and consequently can better facilitate interpretation. Studies in this section will show that self-ratings of ability can differentiate skills needed in one career area from another and which abilities are important for specific occupations.

The Importance of Self-Assessment

Brown (1990) reported four similar studies that investigated one's motives for seeking relevant ability feedback. He tested two theories of how individuals appraise their abilities. The self-assessment theory states that individuals seek feedback in order to obtain a realistic estimate of their abilities. The self-enhancement theory says that individuals seek feedback that will promote a more positive estimate of their abilities. The results of these four studies indicated that individuals were more likely to seek feedback if they believed that the feedback would be positive. However, even when these individuals were led to believe the feedback would be negative, they did not completely avoid seeking more information. This suggests that both theoretical motives are involved somewhat when individuals are seeking information concerning themselves.

In an introductory psychology textbook, Myers (1998) stated that "most people see themselves as better than average" (p. 440). This "above average effect" has been found in many cultures, including Japan and China, where modesty is considered an important attribute (Heine & Lehman, 1997). Kruger (1999) suggested that below average effects are just as common as above average effects. He indicated that individuals judge themselves according to their perceptions of their peers, which are often incorrect. Thus, if an individual considers himself or herself a good driver, he or she may rate himself or herself as above average when his or her peers may be just as competent, so the rating should actually have been average. In contrast, when rating skills in more challenging areas such as creating fine art, the tendency is to rate oneself lower when that person's skill may not be any lower than the average person. Study results show that participants consistently rate themselves higher on easy ability areas and lower on more difficult ability areas.

Alicke, Klotz, Breitenbecher, Yurak and Vrendenburg (1995) reported on seven studies that were conducted to determine if the "better-than-average effect" lessened with personal contact and/or individualization. All of these studies suggested that an individual's tendency to estimate his or her abilities as above average was diminished when presented with a specific comparative person, as opposed to a generic comparison (for example, the average college student). The results showed that if the participant had contact with the comparative person, the better-than-average effect was reduced even more.

The results from Strube and Roemmele's study (1985) present the justifiable conclusion that self-assessment is driven by both a desire to discover self-knowledge and a desire to enhance one's self-esteem. Thus, "self-measures can provide critical information on hard-to-measure abilities and give valuable insight on self-concept. Although kids can overestimate or underestimate their abilities, this measure (*Ability Explorer*) is concrete. It lets the counselor know what the student thinks about their abilities" (Potosky, 1997).

Janko (1995) reported on self-assessment of ability, including the *Ability Explorer*, with 845 inner-city high school students, 30 percent minorities. The findings showed that average ability scale scores were higher for younger students than older students. He attributed older students use feedback more to make adjustments in their self-perceptions and concluded that people are more likely to receive more accurate and repeated feedback in some abilities, such as mathematics.

If it is assumed that an ability does not develop without positive reinforcement, and if accurate and continued support are necessary to validate self-perceptions of critical abilities, then tools must be made available to help teachers, counselors, and other adults understand which abilities students need support for. The *Ability Explorer* was designed to serve this function.

Support for the Ability Explorer *Scales*

A controversy surrounding the measurement of ability relates to how many different abilities exist, justification of their structure, their definitions, and practicality issues. Historically, authors recognized the existence of a very small number of abilities and used factor analysis to reduce the number considered important. This statistical approach remains a strong orientation today.

Harrington (1975), however, proposed that a larger number of abilities were needed to identify individual cognitive and psychomotor uniqueness. He noted several observations that made practical utilization of abilities difficult with clients: Complex definitions, a person needed to subject himself or herself to an expert to be tested and to receive interpretation and the statistical hierarchical structure was not user friendly or comprehensible to many people. These difficulties led him and Arthur O'Shea to develop a simplified, comprehensive, and usable method to self-assess abilities.

Harrington and O'Shea (1993) reverted to the skills and abilities identified in the *Guide for Occupational Exploration, Second Edition (*GOE*).* One of the *Ability Explorer* authors is a co-author of both the GOE and the 14 abilities used in the *Harrington-O'Shea Career Decision-Making System* (CDM), first published in 1974. The GOE abilities are operational definitions resulting from U.S. Dept. of Labor job analysis data

which were used by job analysts to describe traits of workers in the United States (O'Shea, Harrington, Padgett,& Dosch, 1985) The author's previous work with the presentation of abilities for the Australian Standard Classification of Occupations (Harrington, 1993) reinforced the value of clear definitions for diverse users.

The CDM abilities were identified in a literature search in 1974. In 1996 the *Ability Explorer* authors changed the CDM Office Skills and Teaching Ability to Organizational and Interpersonal abilities as a result of observations from concurrent validity studies. All *Ability Explorer* abilities are defined in pages 6-7 with references from supporting researchers in the field. However, it is very important to be aware that the CDM and *Ability Explorer* involve different psychometrics- A person only selects 4 names of abilities with the CDM, while in the *Ability Explorer* individuals identify their abilities by responding to 120 activity statements.

The criteria for the selection of the *Ability Explorer's* ability structure were: client comprehension of the meaning of the abilities, clients'capability to self-evaluate the concepts, and the evidence from concurrent validity studies that the abilities are related to learning specific knowledge in school or work and are used for specific occupations

Construct-Identification Validity

Anastasi and Urbina (1997) explained construct-identification validity as follows: "The construct-identification validity of a test is the extent to which the test may be said to measure a theoretical construct or trait" (p. 126). As such, it relates to the degree to which the underlying traits of the test can be identified and the extent to which these traits reflect the theoretical model on which the test is based. A three-step procedure was used to demonstrate this kind of validity for the *Ability Explorer*. First, several constructs presumed to account for test performance were identified. Second, hypotheses were generated that are based on the identified constructs. Third, the hypotheses were verified by logical or empirical methods. Three basic constructs thought to underlie the *Ability Explorer* and three related testable questions are discussed in the remainder of this section:

1. Because the *Ability Explorer* scales measure self-perceptions of skills, the scales should be intercorrelated.
2. Because it is assumed that different skills and abilities are needed in specific career areas, the *Ability Explorer* should demonstrate that various abilities differentiate the talents needed, for example, in majors in Health Sciences, Science, Engineering, Liberal Arts, and Business Administration.
3. Because the *Ability Explorer* measures self-perceptions of career-related skills, its scores should be moderately correlated with measures of knowledges that develop these career-related skills.

Scale Intercorrelations

For the *Ability Explorer*, intercorrelation coefficients among the instrument's abilities were calculated for all grades**.** The results are presented in Table 7. As evident in Table 7 most of the correlations are moderate--indicating that the self-perception scales are related to each other—but not so highly intercorrelated that they reflect identical abilities.

Table 7 Intercorrelations of *Ability Explorer* Scales for School-Based Normative Sample (Decimals Omitted)

	Artistic	Clerical	Interpersonal	Language	Leadership/ Persuasive	Manual/ Technical	Musical/ Dramatic	Numerical/ Mathematical	Organizational	Scientific	Social	Spatial
Artistic												
Clerical	42											
Interpersonal	42	65										
Language	58	73	72									
Leadership/ Persuasive	57	69	74	77								
Manual/ Technical	45	42	31	40	41							
Musical/ Dramatic	64	48	57	68	70	41						
Numerical/ Mathematical	42	71	42	57	59	58	44					
Organizational	52	78	70	72	78	52	54	66				
Scientific	52	48	35	53	51	61	51	65	52			
Social	48	64	80	71	73	24	57	41	67	37		
Spatial	65	63	50	61	71	72	56	70	69	65	68	

Are self-ratings robust enough to differentiate occupational ability profiles?

Harrington and Harrington (2001) investigated how student ability profiles related to the student's field of study (see Table 8). The results indicated that student ability profiles were differentiated between students in different major fields of study and that the profiles were logical given the field of study. Table 8 also presents the mean percentile ranking for the top six *Ability Explorer* scales for each sample.

Table 8 Mean Ability Percentile Ranks for Eight College Majors (N=644)

Dental Hygiene M=2 F=89		**Nursing M=9 F=69**		**Respiratory Therapy M=47 F=48**		**Pharmacy M=24 F=52**	
Spatial	62	Social *	74	Manual *	90	Scientific *	83
Scientific *	61	Scientific *	73	Scientific *	87	Numerical *	79
Social *	61	Language *	71	Persuasive	78	Clerical *	67
Organizational *	59	Clerical *	70	Clerical *	76	Organizational *	64
Interpersonal *	58	Interpersonal *	69	Social *	75	Spatial *	64
Manual *	57	Organizational *	66	Leadership	74	Language	61
				Spatial	74		
Civil Engineering M=37 F=6		**Psychology M=24 F=94**		**Elementary/Special Education M=16 F=56**		**Management M=42 F=29**	
Numerical *	91	Language *	77	Manual	77	Numerical *	79
Technical *	87	Leadership	75	Language *	69	Persuasive *	62
Manual *	86	Interpersonal *	63	Artistic	68	Clerical	58
Spatial *	83	Organizational *	59	Musical	66	Language *	57
Leadership	75	Scientific	58	Leadership *	65	Manual	56
Scientific *	75	Social *	58	Organizational *	64	Organizational *	53

* The ability was included in the *Guide for Occupational Exploration* (1979, 1984) for this career area

To determine whether these students' ability self-ratings have any relationship to the skills required on the job, a comparison was made with U.S. Dept. of Labor job analysts' data reported in the GOE (1979), (Harrington& O'Shea, 1984). The authors declared a match if a self-rating of a major associated with a job was found in the GOE information. The match was indicated by an asterisk in Table 8. Thirty-six of a possible 49 comparisons (73%) matched for the highest six rated abilities of each major. This high match rate offers confidence to the *Ability Explorer* user that self-reported ability is

consistent with employment-based data.

Relationships of Abilities with Knowledges and the Identification of Occupations Background

The third edition introduces the *Ability-to-Careers Finder,* a schema that matches ability self- ratings to identify ability requirements unique to designated occupations. An empirical procedure is critical to assure that the information is valid. The procedure used identified large numbers of employees in the U.S. workforce across a wide spectrum of industries that self-reported the variables that are important to their job performance. The occupations are those requiring a lot of education to those that do not require much training; some occupations require a great deal of time to become a skilled worker while others learn to do the job quickly. The U.S. Department of Labor's O*NET system databases were the source of this information.

Employers and organizations create occupations that involve different combinations of worker capabilities, knowledges, skills, and tools and technology abilities. A career is a process of developing and verifying the possession of these components or, at least manifesting potential for their learning. Of the nine O*NET databases, knowledges best fitted the developmental orientation of the *Ability Explorer*. Knowledges have an educational base and are broader and less employer specific.

Knowledges are listed in O*NET for every occupation, except when the information is being collected for a new occupation to be added to the system. There are 33 knowledges that can be learned. They can be accessed in most geographic areas in schools, colleges, and learning centers. Knowledges fit the belief of the authors in the developmental view that life is about building blocks of experiences that help attain life goals.

Two other O*NET databases have logical sounding names related to the *Ability Explorer* abilities, such as abilities and skills, but they were not selected. The reasons follow. The O*NET abilities database identifies seven visual abilities, such as night vision and depth perception, posing practical issues of giving too much information for the individual who is beginning a self- and career exploration. Understanding the meaning of some of the abilities, such as "flexibility of closure," is difficult for a young person to comprehend. Likewise, the 31 psychomotor abilities (e.g., arm-hand steadiness), physical abilities (e.g., gross body equilibrium), sensory abilities (e.g., hearing sensitivity) may be easier to measure than the 21 cognitive abilities, such as originality and category flexibility. This information may not be needed in the beginning of a career exploration. Likewise, a skill of coordination is defined as "adjusting actions in relation to other's actions." The complexity of understanding these variables does not fit the goals of user comprehension of concepts and being able to find places to develop designated skills.

The research summarizing the evidence on the development of O*NET knowledges follows (Costanza, D., Fleishman, E, and Marshall-Mies, J., 1999, p. 89):

> There was substantial agreement between the job incumbents and the job analysts. Interrater agreement coefficients for the knowledge scales were substantial and more than sufficient, given the number of raters and the diversity of the occupations represented.

Do the 33 knowledges cover the entire domain of job-related knowledge? The content validity question is answered by the researchers (Costanza, D., Fleishman, E, and Marshall-Mies, J., 1999, p. 89):

> The fact that the principal-components analyses of the data from the incumbent and analysts groups resulted in very similar factors and loadings suggest underlying agreement and consistency in terms of the knowledges and their relationship to each other.

Regarding external validity (Costanza, D., Fleishman, E, and Marshall-Mies, J., 1999, p. 89),

> First, results …suggest that job- relevant knowledges are predictive of job performance in a wide variety of jobs and are correlated with variables such as education and experience. Second in terms of the present effort, we found patterns of responses on the knowledges among certain occupations, such as police patrol officers and janitors and cleaners, that support the high level of job-relevant knowledges required to perform the job.

Development of the Ability-to-Careers Finder

The first step was to identify the list of occupations desired. Only those considered to have good prospects for future employment, occupations with the largest number of workers, are the fastest growing, hot new occupations, and the top favorites of many job seekers were on the list.

This group of diverse occupations presented unique challenges to relate ability to careers. The challenges included the wide span of educational levels most typically associated with each occupation and the *Ability Explorer's* capacity to cover the ability requirements of the occupations.

The following table displays typical educational pathways for the occupations included in the *Ability-to-Careers Finder.* Some occupations have a straightforward requirement for job entry; others have multiple ways of job entry. Additionally, the schema to be developed had to be robust enough to accommodate educational requirements from high school to doctoral level preparation.

	Most Common Educational Requirements	**Multiple Ways of Job Entry**	**Percentage of Educational Level to Enter the Jobs**
High school	63	42	24%
Associate's degree, certificate, or some college	31	70	23%
Bachelor's degree	86	39	29%

Bachelor's degree or higher	20	10	7%
Master's degree or equivalent	14	15	6%
PhD or equivalent	32	13	11%

For most people having a limited number of abilities, such as language, mathematical, scientific, and reading, is not helpful in differentiating their unique strengths. As noted earlier, 16 abilities have been recognized in the career literature. The use of these abilities in combination with secondary and tertiary abilities helps to better differentiate skill components within larger areas, such as Manual/Technical.

The second step in developing the *Abilities-to-Careers Finder* was to assign the knowledges to the abilities. The matches evolved as occupations were assigned to ability areas that better revealed alignments.

- **Artistic:** Design; Fine Arts
- **Clerical:** Clerical
- **Interpersonal:** Customers and Personal Services
- **Language:** English Language; Foreign Languages; Communications and Media
- **Leadership/Persuasive**: Administration and Management; Law, Government, and Jurisprudence; Sales and Marketing
- **Manual/Technical:** Production and Processing; Food Production; Building and Construction; Mechanical; Telecommunications
- **Musical/Dramatic:** Fine Arts
- **Numerical/Mathematical:** Economics and Accounting; Mathematics
- **Organizational:** Personnel and Human Resources; Transportation; Public Safety and Security
- **Scientific:** Engineering and Technology; Physics; Chemistry; Biology; Medicine
- **Social:** Psychology; Sociology and Anthropology; Therapy and Counseling; Education and Training; History and Archeology; Philosophy and Theology
- **Spatial:** Geography

The third step was to collect the highest levels of importance of knowledges for each occupation on the list. Importance data is found in the Detail section about an occupation in O*NET. No universal numerical rank of importance was found for this diversified listing of occupations. There was a preliminary schema before the final version evolved as the initial work was replicated. Educational level was not considered in assigning

knowledges to an ability area.

The methodology used in the construction of the *Ability Explorer* and *Abilities-to-Careers Finder* creates some issues to be dealt with during interpretation:

1. People will qualify for occupations requiring lower levels of the abilities, even though the highest abilities are used to identify matching occupations.
2. People with good self-esteem will have other ability combinations to explore. The moderate intercorrelations of abilities suggest that people will have multiple career options available to them.
3. The *Abilities-to-Careers Finder* includes occupations with which the user and helper may have little familiarity. Expect users to need to research occupations to learn about new career areas. In researching a career area, review tasks to check if the person would like the work, collect information about what skills and technology are needed, and seek out whether the occupations are available in your locale and if preparatory skills can be secured within your community.

The fourth step of the *Abilities-to-Careers Finder* is where the related educational levels and STEM information have been added. Users are now confronted with data involving two major decisions: which occupation should they pursue and what financial investment they are going to make in their educational and training preparation. These questions are related. Some occupations may typically cost more to attain the usual educational preparation.

Criterion-Related Validity

The empirical study of ability self-ratings has a long history. In a 1969 Educational Testing Service (ETS) study of 5,129 college freshmen at 29 colleges, Baird found that self-ratings of scholastic ability were the best predictor of grade-point average, with test scores adding little to the multiple regression equation.

In a comparison of the predictive validity of tests versus self-ratings, Prediger (1999), a research psychologist at American College Testing (ACT), wrote: “In each of the five studies, ability composites using self-estimates had higher hit rates (were more valid). The proportional improvement over ability test hit rates ranged from .08 to .48. In the study comparing test-score and self-estimate hit rates for the same six abilities, self-estimates had the higher hit rate. If the hit rates had been equal, the self-estimates would still have saved about 90 minutes in test administration time (and related expenses)” (p. 175).

Murphy and Davidshofer (1991) also noted that validity coefficients of traditional ability and aptitude tests to be typically close to .30, which generally account for approximately 10% of the variance in job performance. In general, the results of self-evaluations of ability compared with measures of performance have been low. A review of 55 studies reported a mean validity coefficient of r =.29 (Mabe & West, 1982). Therefore, the reader should not expect high correlations, especially when differences in constructs exist. For example, when Differential Aptitude Tests subtests - Spatial involves perceptual and psychomotor skills and Clerical Speed & Accuracy is checking the spelling of one list with a second list, which are considerably different than the item content in the corresponding *Ability Explorer scales*, that is, describing Spatial ability as looking at a

rough sketch and understanding what the finished product will look like, and describing Clerical ability as using a computer keyboard to compose a letter, the outcomes are expected to be low correlations.

Using the Ability Explorer with an Aptitude or Achievement Test

Aptitude and achievement tests provide objective information about the individual's ability and skill levels in comparison to others. However, one must consider individuals' self-perception of their abilities and skills as well. This information comes from evaluating the self-reports from the *Ability Explorer*. Self-perception of abilities has profound implications for individuals and their perceived choices. For example, an individual may have generally good scores on an aptitude test and show a fairly high level of academic development on an achievement test but might self-rate several related abilities on the *Ability Explorer* in the low range. What are the implications of his or her low level of self-confidence for the educational and career planning process? This individual could very well shortchange him or herself when thinking about careers and other postsecondary options. Whatever the reason for a self-rating that is not in line with the individual's potential (as indicated by aptitude test scores), you should intervene as early as possible so that the individual can take steps to realize that potential.

Conversely, another student might self-rate his or her abilities on the *Ability Explorer* higher than one would expect based on aptitude and/or achievement test results. Might this individual have an unrealistic view of his or her abilities? Or could this self-rating be made by someone who has genuine confidence and good potential but does not perform well on standardized tests? Again, the implications for career planning are significant. If the individual has an unrealistic understanding of his or her abilities, this could carry over to an inappropriate career decision. Or if the individual does have confidence and potential, a career guidance intervention program can help him or her explore decisions about careers that might lead to satisfying results.

Neither the results of the *Ability Explorer* nor an aptitude or achievement test should be viewed in isolation. When compared and contrasted with one another, the scores from these very different assessments can contribute to a more complete picture of the student or adult client.

Ability Explorer Empirical Investigations

In a study conducted to address respiratory care students' attrition rate of 30 to 40 percent from four-year colleges and 40 percent from associate degree programs, faculty examined the other abilities of students beyond the typical verbal and quantitative measured on the SAT. The study found that faculty judgment of the abilities needed matched the six highest mean *Ability Explorer* abilities, that is, Manual (to operate equipment), Scientific, Persuasive (teaching patient), Clerical (recordkeeping), Social, and Leadership (command patient's respect). The 100 sampled adults were from California, Kansas, Massachusetts, Missouri, Ohio, and South Carolina. Fifty-two percent had an associate's degree and 48% a baccalaureate degree. Fifty-four percent were females and 46% were males (Watson, Harrington & Morrison, 1996).

Ramsey (2004) sought to identify the highest abilities for 25 regional alternative high

school students who do not necessarily possess low intelligence but may have behavioral problems. It was found that over 75% had Manual and Technical/Mechanical as their highest rated *Ability Explorer* abilities. The students identified 71 occupations that matched their best abilities, 76% of which had on-the-job training (OJT) entry requirements. The *Ability Explorer* results corresponded with students' self-rated preferred nonacademic learning style of OJT – 24% of the occupations identified by the students had a few days of demonstration up to 2 months job preparation; 17% had 2 to 6 months training, and 35% required a learning period of 6 months up to 5 years. The author concluded that some at-risk students in the *No Child Left Behind* thrust might benefit from the *Ability Explorer* to identify viable alternative career options.

With 66 Honors Program students at a public high school north of Boston, Read (2001) used the *Ability Explorer* as one measure in a self-concept and academic motivation study. The school was concerned that these talented students were dropping out of the program. The sample consisted of 30 female and 13 male grade 9 students and 15 female and 6 male grade 11 students, predominantly Caucasian. For these high-achieving students, the results showed only 49% from grade 9 and 65% from grade 11 self-rated their highest ability at the 90th percentile and above. Grade 9 males had a 69% discrepancy between their grades and self-ratings of abilities versus 23% for the females. This overall significant gender discrepancy was most notable in the scientific ability for males. Forty-three percent of both grade 9 and grade 11 students had at least one discrepancy between their two highest self-rated abilities and activities. Discrepancy was defined as when the score of the variable fell in a different interpretive score level, for example, a high course grade level but a medium self-rating of the ability. The visible portrayal of the discrepancies served as a vehicle to initiate discussion of self-concepts and self-beliefs.

Each year students ask teachers and their school to write college recommendation letters. Using the 14 *Ability Explorer* abilities with 93 grade 9 students in late Spring, Langelier (2003) found that four teachers who saw these students regularly could only judge their students on 7 of the 14 abilities unless the ability was related to the course the teacher taught. While this school prided itself that faculty were involved with students, the faculty self-proclaimed they did not sufficiently know the personal strengths of students to evaluate many of their abilities.

Studies Used in the Ability Explorer's Development

How well do self-reports compare with aptitude tests in describing workers' abilities? Using the criterion of self-assessed aptitudes of employees, Harrington and Schafer (1996) compared the abilities required for jobs from GOE U.S. Department of Labor job analysts with the results of the *Occupational Aptitude Pattern* (OAP) of the *General Aptitude Test Battery* (GATB) (1979). Psychometric textbooks typically cite the GATB as the prototype of aptitude tests. The OAP structure, which covers 97% of the non-supervisory occupations in the *Dictionary of Occupational Titles* (U.S. Department of Labor, 1991), is the delivery system for reporting and using GATB scores. Occupations studied ranged from those requiring high levels of education, such as aerospace physicists, to those needing no formal education, such as packagers. Both GOE and OAP data were available on individuals from 51 occupational groups. In 49 of the 51 samples,

worker-identified job aptitudes were more congruent with the larger number of abilities identified by GOE job analysts than with the smaller number of abilities measured by the GATB.

In a series of studies on self-ratings of the four best abilities, one sample consisted of 2,272 employed workers, 1,153 men and 1,119 women who took the *Harrington-O'Shea Career Decision-Making System* (CDM) (Harrington & O'Shea, 1993) from 1987 through 1991. Participants worked in professional, technical, managerial, clerical, sales, service, trade, and production areas. The average sample size was 44. Of the 66 Work Groups comprising the GOE, 33 (50%) were included in this study. To obtain typical workers, samples were collected from large, national organizations whenever feasible. Participation for many company and union officials was dependent on no personal demographics being supplied. Examples of the concurrent validity samples consisted of aerospace physicists (NASA), biochemists (U.S. Army Materials Command), microbiologists (Abbott Laboratories), correctional officers (Massachusetts Dept. of Corrections), electrical engineers (Digital Equipment Corp./Hewlett-Packard), telecommunication technicians (NYNEX/Verizon), toolmakers (Ford Motor Co.), machine operators (Gillette Co.), assemblers (Polaroid Corp.), computer operators (Blue Cross and Blue Shield of Massachusetts), sales clerks (K-Mart), systems analysts (Mobil Oil), and accountants (Price-Waterhouse).

Another sample (Harrington & O'Shea, 1993) consisted of students in 20 vocational-technical programs (N=1,024; M=701 and F=323) and students in 32 college and university majors (N=2,289; M=1,051 and F=1,238) who took the CDM and self-rated their four best abilities. The average size of the vocational-technical sample was 49 and covered four major areas: artistic (photography and commercial art), service (health assisting and food service), office (computer operations and medical records technology), and trades (carpentry and metal trades). The average size of the college and university sample was 59 and covered five major curricula areas: the arts (film and journalism), science and mathematics (computer information science and agricultural science), medical science (dentistry and optometry), business (accounting and marketing), and liberal arts (economics and psychology).

The methodology used involved two raters, the co-editors of the second edition of the GOE (Harrington & O'Shea, 1984) who worked independently and determined whether each potential self-reported CDM ability matched an ability listed by the GOE for each occupation, school program, and college major. The CDM abilities are well covered in the skills and abilities sections of each GOE Work Group. The match rate was 48% for vocational-technical students; and 69% for college students and Harrington and Schafer (1996) had a 64% for employed workers.

Harrington and Harrington (1996) observed that Social ability could have been labeled Interpersonal. Interpersonal is an ability well recognized in the vocational literature. Social was often selected as an ability (98 of 114 samples), cutting across all occupations, majors, and programs, even those in which social skills seem rather tangential. Additionally, when the original ability, Teaching, was examined, it also could be included in the broader term Social in terms of applicability. Finally, in reviewing the abilities covered in feedback sessions with employees and students, it was evident that one large area was not covered, the ability to organize. This is the ability to prioritize

activities, to organize, process, and maintain written and computerized records and other forms of information in a way that makes sense. These are functions carried out often by administrative assistants, coordinators, clerks, and many professional and trades workers. They involve responsibilities beyond clerical tasks and activities that administrators or managers delegate to someone else. Utilizing the vocational literature and job analysis data, it was deemed beneficial to create an Organizational ability as well as Interpersonal and to redefine Social ability within the ability structure of the *Ability Explorer*.

Summary

The *Ability Explorer* is designed as a career planning tool. Its constructs of development and self-concepts of abilities (Super, Savickas & Super, 1996) fit with the instrument's method of interpretation, such as suggesting ways for improving one's abilities, especially if one has had limited experiences or opportunities for exposure. The authors feel that this developmental orientation is suitable with the multicultural populations in our schools and the workforce who need to be made aware that school age is a time for building their strengths as well as adults need to continue to learn to achieve educational and career goals. The authors believe the instrument has validity in that it does what it is intended to do.

Ability Norms for Middle/High School Students

T-Scores and Percentiles (N=3480)

Raw Score	Artistic		Clerical		Interpersonal		Language		Leadership/ Persuasive		Manual/ Technical		Raw Score
	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	
10	1	21	1	7	1	6	1	15	1	13	1	18	10
11	1	22	1	9	1	7	1	16	1	14	1	19	11
12	1	23	1	10	1	9	1	17	1	16	1	21	12
13	1	24	1	11	1	10	1	18	1	17	1	22	13
14	1	25	1	12	1	11	1	19	1	18	1	23	14
15	1	26	1	13	1	12	1	20	1	19	2	24	15
16	2	27	1	15	1	13	1	21	1	20	2	25	16
17	2	28	1	16	1	14	1	23	1	21	2	26	17
18	3	29	1	17	1	16	1	24	1	22	3	27	18
19	3	30	1	18	1	17	1	25	1	23	3	28	19
20	4	31	1	20	1	18	2	26	2	25	4	29	20
21	5	32	1	21	1	19	2	27	2	26	5	30	21
22	6	33	1	22	1	20	3	28	2	27	6	31	22
23	7	34	1	23	1	22	3	29	3	28	6	33	23
24	8	35	2	25	1	23	4	30	3	29	7	34	24
25	10	36	2	26	1	24	5	31	3	30	8	35	25
26	12	37	2	27	2	25	6	33	4	31	10	36	26
27	14	38	3	28	2	26	6	34	5	33	11	37	27
28	15	39	4	29	3	28	8	35	6	34	13	38	28
29	18	40	4	31	3	29	9	36	7	35	15	39	29
30	21	41	5	32	4	30	10	37	8	36	18	41	30
31	23	42	6	33	5	31	12	38	9	37	20	41	31
32	26	43	7	34	6	32	15	39	11	38	23	42	32
33	29	44	9	36	7	34	18	40	14	39	26	44	33
34	33	45	11	37	8	35	21	41	16	41	29	45	34
35	36	46	13	38	10	36	24	43	19	42	32	46	35
36	40	47	15	39	12	37	27	44	22	43	36	47	36

Raw Score	Artistic		Clerical		Interpersonal		Language		Leadership/ Persuasive		Manual/ Technical		Raw Score
	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	
37	43	48	18	41	14	38	31	45	26	44	40	48	37
38	47	49	21	42	16	40	35	46	30	45	44	49	38
39	51	50	25	43	19	41	39	47	34	46	48	50	39
40	54	51	28	44	22	42	43	48	38	47	52	51	40
41	58	52	32	46	25	43	48	49	43	48	57	53	41
42	62	53	36	47	29	44	52	50	48	50	61	54	42
43	65	54	41	48	33	46	56	52	52	52	65	55	43
44	69	55	46	49	36	47	60	53	56	52	69	56	44
45	72	56	51	50	41	48	65	54	60	53	73	57	45
46	75	57	55	52	45	49	69	55	64	54	76	58	46
47	78	58	60	53	49	50	73	56	68	55	80	59	47
48	81	59	65	54	54	52	77	57	72	56	83	60	48
49	83	60	70	55	59	53	80	58	76	58	86	61	49
50	86	61	75	57	64	54	84	59	79	59	89	62	50
51	88	62	79	58	68	55	87	60	83	60	91	64	51
52	91	63	84	59	73	56	89	62	86	61	94	65	52
53	93	64	87	60	78	58	91	63	89	62	95	66	53
54	94	65	90	62	82	59	93	64	91	63	96	67	54
55	95	66	93	63	86	60	95	65	93	64	97	68	55
56	97	67	95	64	89	61	96	66	95	65	98	69	56
57	98	68	97	65	92	62	98	67	96	67	98	70	57
58	99	69	98	66	95	64	99	68	97	68	99	72	58
59	99	70	99	68	98	65	99	69	98	69	99	73	59
60	99	71	99	69	99	66	99	71	99	70	99	74	60
Mean		**39.02**		**44.64**		**46.65**		**41.63**		**42.43**		**41.44**	
SD		**10.17**		**8.11**		**8.35**		**8.96**		**8.77**		**9.17**	

Raw Score	Musical/ Dramatic		Numerical		Organizational		Scientific		Social		Spatial		Raw Score
	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	
10	1	21	1	19	1	7	1	23	1	11	1	12	10
11	1	22	1	20	1	9	1	24	1	12	1	13	11
12	1	53	1	21	1	10	1	25	1	13	1	14	12
13	1	34	1	22	1	11	1	26	1	15	1	15	13
14	1	25	1	23	1	12	2	27	1	16	1	16	14
15	1	26	1	24	1	14	2	28	1	17	1	17	15
16	2	27	1	25	1	15	2	29	1	18	1	19	16
17	2	28	2	26	1	16	3	30	1	19	1	20	17
18	3	29	2	27	1	17	4	31	1	20	1	21	18
19	3	30	2	28	1	18	4	32	1	21	1	22	19
20	4	31	3	29	1	20	5	33	1	22	1	23	20
21	5	32	4	30	1	21	7	34	2	23	2	25	21
22	6	33	4	31	1	22	8	35	2	25	2	36	22
23	7	34	5	32	1	23	10	36	2	26	2	27	23
24	8	35	6	33	2	25	12	37	3	27	3	28	24
25	10	36	7	35	2	26	14	38	3	28	4	29	25
26	12	37	9	36	2	27	16	39	3	29	4	30	26
27	13	38	10	37	3	28	18	40	4	30	5	32	27
28	15	39	12	38	3	30	21	41	5	31	6	33	28
29	17	40	13	39	4	31	24	42	6	32	7	34	29
30	20	41	16	40	5	32	27	43	7	34	8	35	30
31	22	42	18	41	6	33	30	44	8	35	10	36	31
32	25	43	20	42	7	35	34	45	9	36	11	37	32
33	29	44	23	43	9	36	38	46	11	37	13	39	33
34	32	45	26	44	11	37	42	47	13	38	16	40	34
35	35	46	29	45	13	38	45	49	15	39	18	41	35
36	39	47	33	46	15	40	49	50	17	40	21	42	36

Raw Score	Musical/ Dramatic		Numerical		Organizational		Scientific		Social		Spatial		Raw Score
	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	
37	42	48	37	47	18	41	53	51	20	41	25	43	37
38	45	49	40	48	22	42	57	52	22	42	28	45	38
39	49	50	44	49	26	43	62	53	26	44	33	46	39
40	53	51	48	50	30	45	65	54	29	45	38	47	40
41	57	52	53	51	34	46	69	55	33	46	43	48	41
42	60	53	57	52	39	47	72	56	38	47	47	49	42
43	63	54	61	53	44	48	75	57	41	48	52	50	43
44	67	55	65	54	48	50	79	58	46	49	57	52	44
45	71	56	69	55	54	51	82	59	50	50	61	53	45
46	74	57	72	56	59	52	85	60	54	51	65	54	46
47	77	58	76	57	64	53	87	61	58	52	70	55	47
48	80	59	79	58	68	55	89	62	62	54	74	56	48
49	83	60	82	59	72	56	91	63	66	55	78	57	49
50	86	61	85	60	76	57	93	64	71	56	82	59	50
51	88	62	87	61	81	58	94	65	75	57	85	60	51
52	90	62	90	62	84	59	96	66	80	58	88	61	52
53	91	63	92	63	87	61	97	67	83	59	91	62	53
54	94	64	93	64	90	62	98	68	86	60	93	63	54
55	96	65	95	65	93	63	98	69	89	61	95	65	55
56	97	66	96	66	95	64	99	70	92	63	96	66	56
57	98	67	97	67	97	66	99	71	94	64	98	67	57
58	99	68	99	68	98	67	99	72	96	65	98	68	58
59	99	69	99	69	99	68	99	73	98	66	99	69	59
60	99	70	99	70	99	69	99	74	99	67	99	70	60
Mean		**39.29**		**40.40**		**44.36**		**36.43**		**44.78**		**42.65**	
SD		**10.07**		**9.66**		**8.05**		**9.64**		**8.97**		**8.50**	

Ability Norms for Postsecondary Students and Adults

T-Scores and Percentiles (N=1305)

Raw Score	Artistic		Clerical		Interpersonal		Language		Leadership/ Persuasive		Manual/ Technical		Raw Score
	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	
10	1	25	1	9	1	3	1	16	1	14	1	21	10
11	1	26	1	10	1	4	1	17	1	15	1	22	11
12	1	27	1	11	1	6	1	18	1	16	1	23	12
13	1	28	1	12	1	7	1	19	1	17	1	24	13
14	1	29	1	14	1	8	1	20	1	18	2	25	14
15	2	30	1	15	1	9	1	21	1	19	2	26	15
16	2	31	1	16	1	11	1	22	1	21	2	27	16
17	3	32	1	17	1	12	1	23	1	22	3	28	17
18	5	33	1	18	1	13	1	25	1	23	3	30	18
19	6	34	1	20	1	14	1	26	1	24	4	31	19
20	7	35	1	21	1	15	1	27	2	25	5	32	20
21	9	36	1	22	1	17	2	28	2	26	6	32	21
22	11	37	1	23	1	18	3	29	2	27	7	33	22
23	13	38	1	24	1	19	3	30	2	28	8	35	23
24	15	39	1	26	1	20	4	31	3	30	9	36	24
25	17	40	1	27	1	22	4	32	3	31	10	37	25
26	20	41	2	28	1	23	5	33	4	32	12	38	26
27	23	42	3	29	1	24	6	34	5	33	14	39	27
28	27	43	4	30	1	25	7	36	6	34	16	40	28
29	30	44	5	32	2	27	10	37	7	35	18	41	29
30	34	45	5	33	2	28	12	38	9	36	21	42	30
31	38	46	7	34	3	29	15	39	11	38	25	44	31
32	41	47	8	35	3	30	18	40	13	39	27	45	32
33	44	48	9	37	4	32	20	41	15	40	30	46	33
34	48	49	12	38	4	33	23	42	18	41	34	47	34
35	51	50	14	39	6	34	26	43	21	42	38	48	35
36	54	51	16	40	8	35	29	44	24	43	41	49	36

Raw Score	Artistic		Clerical		Interpersonal		Language		Leadership/ Persuasive		Manual/ Technical		Raw Score
	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	
37	57	52	19	41	10	36	33	45	27	44	45	50	37
38	61	53	23	43	12	38	37	46	30	45	49	51	38
39	65	54	26	44	13	39	41	48	34	47	53	52	39
40	68	55	30	45	16	40	45	49	38	48	57	53	40
41	71	56	33	46	19	41	49	50	43	49	61	54	41
42	73	57	37	47	22	43	53	51	47	50	65	55	42
43	76	58	42	49	25	44	57	52	51	51	69	57	43
44	79	59	47	50	28	45	61	53	55	52	72	58	44
45	82	60	53	51	33	46	65	54	59	53	75	59	45
46	84	61	58	52	38	48	69	55	63	54	78	60	46
47	86	62	62	53	42	49	72	56	67	56	82	61	47
48	88	63	67	55	47	50	77	57	71	57	85	62	48
49	90	64	72	56	52	51	80	59	75	58	88	63	49
50	91	65	76	57	58	53	83	60	79	59	90	64	50
51	93	66	80	58	63	54	86	61	82	60	92	65	51
52	95	67	85	59	68	55	88	62	85	61	93	66	52
53	96	68	88	61	72	56	90	63	88	62	95	67	53
54	96	69	90	62	77	57	93	64	90	64	96	68	54
55	98	70	92	63	81	59	94	65	92	65	96	69	55
56	98	70	95	64	85	60	96	66	94	66	96	71	56
57	99	71	96	66	90	61	97	67	95	67	97	72	57
58	99	72	97	67	93	62	98	68	97	68	97	73	58
59	99	73	99	68	96	64	99	69	98	69	98	74	59
60	99	74	99	69	99	65	99	71	99	70	98	75	60
Mean		**35.34**		**44.20**		**48.02**		**41.29**		**42.26**		**37.11**	
SD		**10.52**		**8.60**		**8.22**		**9.45**		**9.25**		**9.81**	

Raw Score	**Musical/ Dramatic**		**Numerical**		**Organizational**		**Scientific**		**Social**		**Spatial**		Raw Score
	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	
10	1	26	1	23	1	7	1	26	1	10	1	13	10
11	1	27	1	24	1	9	1	27	1	11	1	14	11
12	1	28	1	25	1	10	1	28	1	12	1	15	12
13	1	29	1	26	1	11	2	29	1	13	1	16	13
14	2	30	1	27	1	12	2	30	1	14	1	18	14
15	2	31	12	28	1	13	3	31	1	15	1	19	15
16	3	32	3	29	1	15	4	32	1	16	1	20	16
17	4	33	3	30	1	16	5	33	1	18	1	21	17
18	5	34	4	31	1	17	7	34	1	19	1	22	18
19	7	35	5	32	1	18	8	35	1	20	1	23	19
20	9	36	6	33	1	20	10	36	1	21	1	24	20
21	12	37	6	34	1	21	12	37	1	22	2	25	21
22	15	38	7	35	1	22	13	38	1	23	2	27	22
23	17	39	9	36	1	23	17	39	1	24	3	28	23
24	19	40	10	37	1	24	19	40	2	25	3	29	24
25	23	41	12	38	1	26	21	41	2	27	4	30	25
26	26	43	14	39	1	27	25	42	3	28	5	31	26
27	30	44	16	40	2	28	28	43	3	29	5	32	27
28	34	45	18	41	2	29	32	45	3	30	6	33	28
29	38	46	21	42	3	31	36	46	4	31	7	35	29
30	41	47	24	43	4	32	40	47	5	32	9	36	30
31	45	48	28	44	5	33	43	48	6	33	10	37	31
32	47	49	31	45	6	34	46	49	7	34	12	38	32
33	51	50	34	46	8	35	80	50	9	36	14	39	33
34	55	51	38	47	9	37	54	51	11	37	16	40	34
35	58	52	42	48	12	38	58	52	13	38	19	41	35
36	62	53	45	49	14	39	61	53	14	39	22	42	36

Raw Score	Musical/ Dramatic		Numerical		Organizational		Scientific		Social		Spatial		Raw Score
	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	% Rank	*T*-Score	
37	66	54	49	50	17	40	65	54	16	40	26	44	37
38	70	55	52	51	20	41	68	55	19	41	29	45	38
39	72	56	56	51	24	43	73	56	21	42	32	46	39
40	74	57	59	52	26	44	75	57	25	44	37	47	40
41	76	58	63	53	30	45	78	58	28	45	41	48	41
42	80	59	66	54	35	46	80	59	32	46	46	49	42
43	82	60	70	55	39	48	83	60	36	47	49	50	43
44	85	61	74	56	43	49	86	61	40	48	54	52	44
45	88	62	77	57	48	50	88	62	43	49	59	53	45
46	90	63	79	58	53	51	90	63	48	50	64	54	46
47	91	64	81	59	59	52	92	64	53	51	69	55	47
48	93	65	84	60	64	54	93	65	58	53	72	56	48
49	94	66	86	61	68	55	95	67	62	54	77	57	49
50	95	67	88	62	73	56	96	68	67	55	80	58	50
51	95	68	91	63	77	57	97	69	71	56	83	60	51
52	97	69	92	64	81	59	97	70	75	57	87	61	52
53	98	70	93	65	84	60	98	71	79	58	89	62	53
54	98	71	95	66	87	61	99	72	83	59	91	63	54
55	99	72	96	67	90	62	99	73	86	60	94	64	55
56	99	74	98	68	93	63	99	74	89	62	96	65	56
57	99	75	98	69	95	65	99	75	93	63	97	66	57
58	99	76	99	70	97	66	99	76	96	64	99	67	58
59	99	77	99	71	99	67	99	77	98	65	99	69	59
60	99	78	99	72	99	68	99	78	99	66	99	70	60
Mean		**33.38**		**37.52**		**45.03**		**33.34**		**45.70**		**42.60**	
SD		**10.17**		**10.68**		**8.62**		**10.14**		**9.27**		**9.35**	

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