Programming the WRQ to take Disability into Account

Introduction: The WRQ is a statistical tool to support clinical decision making with regard to occupational potential of individuals with disabilities. Employers can use the WRQ to support selection or placement of qualified persons with disabilities. It can be used to support litigation over vocational issues. This document gives step-by-step directions for programming the WRQ to consider disability in job-matching.

The 150 PAQ/WRQ job elements cover such a wide range of work activities that the occupational impacts of virtually any disability can be modeled with them. The occupational specialist specifies on which PAQ items disability limits performance and then sets item limits to indicate maximum performance on those items (see item limits decision rule). Setting item limits programs the WRQ to take disability into account. When the job matching algorithm runs, the effect of item limits bifurcates the job-matching report into a list of the closest-matching jobs on which no PAQ ratings exceed item limits and a list of closest-matching jobs on which PAQ ratings do exceed item limits (see how to read a report).

Using Self-Ratings: Under certain conditions, an individual may be able to self-rate. An evaluator's decision to collect self-ratings from an individual should turn on the person's ability to 1) read the items, 2) use rating scale anchor points, 3) understand that self-ratings will be statistically matched against a database, and 4) that results of matching are statistical estimates rather than precise assignment to jobs. Readability of PAQ directions and PAQ items reaches college- graduate levels (Ash & Edgell, 1975), which is essential to consider in the decision to use self-ratings. Self-report data from the WRQ is different from typical self-report formats such as an MMPI-2 or cognitive ability test. The intent of the WRQ is to take an inventory of individual's capabilities or tolerances to perform PAQ items. The self-rating idea is to draw on the individual's self-knowledge to generate an accurate representation of their capabilities and tolerances. The examiner naturally reviews these ratings and limits to ensure consistency with item definitions and to get a grasp of the person's occupational frame of reference. WRQ items can best be rated by the individual and examiner working together and jointly deciding what ratings and item limits are appropriate.

Westen and Weinberger (2004) have summarized advantages and disadvantages of self-reports. Advantages include the fact that individuals are the most obvious sources of data about themselves, and if we want to know what they believe or feel, it makes sense to ask them. Further, self-reports are easy to obtain and have paid off empirically, e.g., Spector and Jex (1998) found moderate convergent validity between self-report scales involving stressful aspects of jobs and resulting strains on workers. However, Spector and Jex discussed frequent criticisms of

the validity of self-report measures and raised questions about interpretations of findings in the literature based on self-report scales. A disadvantage of self-reports include needs for training and experience to understand personality and psychopathology and the minimal access individuals have to many of their cognitive processes (Harrison & McLaughlin, 1993). Although the WRQ does not address personality and psychopathology directly, WRQ use requires adherence to standardized definitions of PAQ items and to rating scale anchor points. Some individuals have limited ability to do this. A further limitation of self-report is that in most areas of psychology, it is easy to measure skills or aptitudes, which is better than relying on self-report or those measures. Finally, significantly, the utility of self-report can be limited by defensive and self-representational biases (Westen & Weinberger, 2004). Vasilopoulos, Reilly and Leaman (2000) used self-report methodology to study conscious distortion of self-report responses to present favorable images in job application. Occupational specialists who choose to collect self-report data for its advantages must be aware of these limitations.

Two Ways to Generate Lists of Jobs that are
Potentially Appropriate for Individuals with Disabilities

Ratings that are relevant to an individual can generated in two ways: 1) by rating individual capabilities and tolerances item-by-item, one item at a time, or 2) by selecting a reference job from the PAQ database that the individual has performed or is interested in and entering that job's PAQ ratings in the job-matching algorithm. Both methods require setting item limits, both methods will be illustrated in this document, and both start by clicking a choice on the **Choose an evaluation method** screen below.
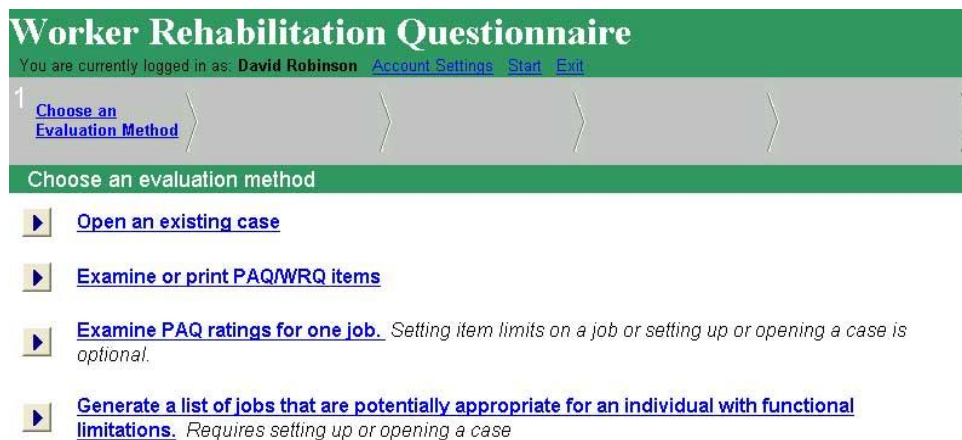
Rating Individual Capabilities and Tolerances Item-by-Item: Click **Generate a list of jobs that are potentially appropriate for an individual with functional limitations**, in the **Choose an evaluation method** screen above, which points to the **Setup/Open Case** screen below.


Enter information in any or all of the data entry blanks of the **Setup/Open Case** screen above. It all ends up on the WRQ report. After this data entry, click the **Save Information** button at the bottom of the screen.

The navigation bar is located near the top of the screen and illustrated below. Clicking on any of the hotlinks 1-5 points to pages indicated by hotlink names. Hotlink 6 activates the job-matching algorithm.

After, clicking the **Save Information** button at the bottom of the **Setup/Open Case** screen, click **Continue (Select Database)** at the bottom of that screen or **Select Database** in the third position on the navigation bar. Both choices point to the **Select Database** screen below.
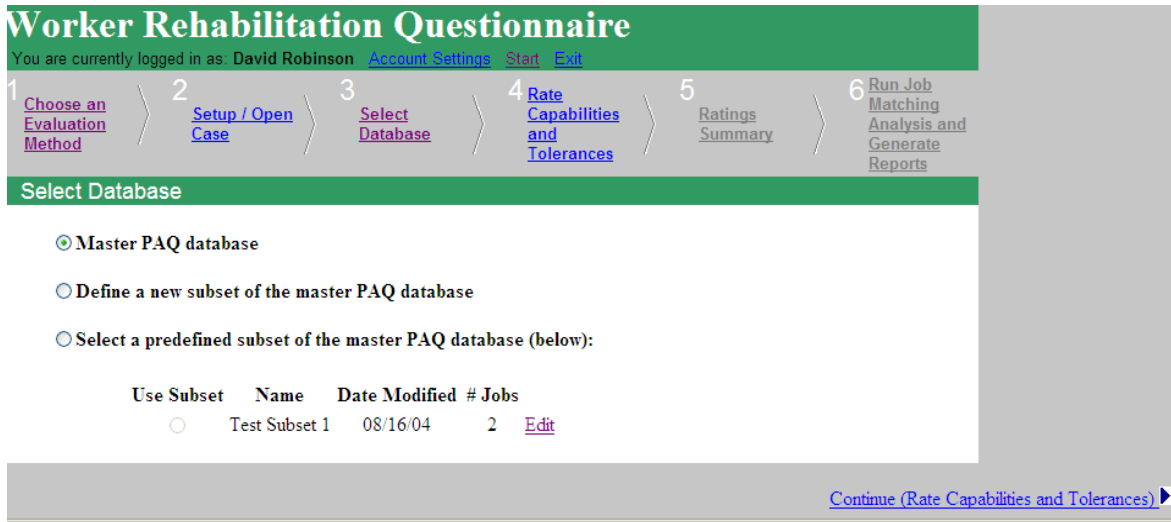
The master PAQ database is the default. If the occupational specialist selects the default, the next step is to click **Rate Capabilities and Tolerances** in the navigation bar or **Continue (Rate Capabilities and Tolerances)** at the bottom of the **Select Database** screen. The occupational specialist can define a new subset of the master PAQ database to reflect jobs in an organization or in a small labor market by clicking **Define a new subset of the master PAQ database**. That routine is not illustrated, but system prompts for doing that are easy to follow.

Clicking **Rate Capabilities and Tolerances** in the navigation bar or **Continue (Rate Capabilities and Tolerances)** at the bottom of the of the **Select Database** screen points to the definition of Item #1 Reading words below:
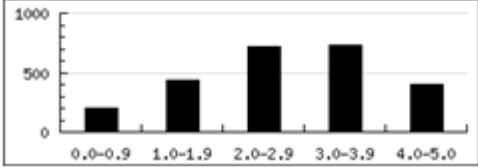
Worker Rehabilitation Questionnaire

You are currently logged in as: David Robinson   Account Settings   Start   Exit

| 1 Choose an Evaluation Method | 2 Setup / Open Case | 3 Select Database | 4 Rate Capabilities and Tolerances | 5 Ratings Summary | 6 Run Job Matching Analysis and Generate Reports |

Item #1: Reading words

This item indicates whether any written language symbols (alphabetical characters, letters, words, sentences, etc.) must be read on the job and, if so, the extent to which written symbols are used. The examples are self-explanatory, but note that th materials do not include items covered by Item 2 (Using numbers). Although it may seem that all jobs involve some reading this is not always the case. Also, one should note that information must be obtained from the written materials. Simply the presence of written materials in the work environment does not justify a rating on this item. For example, a newspaper car handles a large amount of written material but would likely receive a low rating on this item because he or she does not read the newspapers as part of the job. Note also that the medium in which the written materials are presented is not to be considered; if words are read from a computer, the job would receive a rating on this item.

Distribution of the 2,491 jobs in the full WRQ job database:

Median 2.6

How the Median can be used to anchor item ratin

Examples of jobs in the PAQ database that are rated at each rating scale point:

Level	Job Title
0.0 - 0.9	Pourer, Hot Metal; Hand Sander; Yarn Winder; Machine Feeder
1.0 - 1.9	Tree Trimmer; Electronics Assembler; Janitor; Sawmill Worker
2.0 - 2.9	Camera Operator; Carpenter; Telephone Operator; Truck Driver, Light
3.0 - 3.9	Information Clerk; Drafter, Mechanical; Cashier; Hospital Admitting Clerk
4.0 - 4.9	Employment Interviewer; Manager, Personnel; Librarian; Reporter; Claim Adjuster
5.0	Newspaper Editor; University Professor, English Department; Attorney

To what extent is this individual capable or tolerant of this item?

Rate this Item [   ] on a scale of 0.0 (not capable or not tolerant) to 5.0 (highly capable or highly tolerant). Instructions for Rating Items

Limit this Item [   ] Definition of Item Limits   Item Limits Decision Rule

[Next Item (2)]   [Go to item: [   ]]   Progress: [   ]

Save Evaluation   Close Evaluation   Print   Continue (Ratings Summar▶

The item name is directly underneath the navigation bar. Following that, a paragraph of text states what the item was designed to measure. Below that is a histogram that shows the distribution of 0–5 PAQ ratings on Reading words across all 2,491 jobs in the master PAQ database. The height of the column in the 0.0–0.9 bin shows that

approximately 200 jobs had ratings between 0.0–0.9, fewer than 500 jobs between 1.0–1.9, about 750 jobs between 2.0–2.9, and so on. From visual inspection, the total number of jobs summed across these intervals appears to approximate 2,500—actually 2,491, the number of jobs in the master PAQ database. Each item has its own unique distribution of PAQ ratings, so histogram data help to anchor individual capability or tolerances ratings and to set each item limit.

The median PAQ rating for Reading words is 2.7. The median may help the occupational specialist to contemplate an individual's level of capability or tolerance and whether it makes sense to choose a rating or item limit value above or below the median.

Examples of jobs in the PAQ database that are rated at each rating scale point are in a table underneath the histogram. Jobs listed at the upper end of the rating scale on Item #1, such as English Professor, Attorney and Claim Adjuster, justify higher ratings on Reading words than Tree Trimmer or Machine Feeder, which are rated lower on the scale. A job analyst who rates a job with the PAQ compares the requirement for reading words on that job with reading requirements for jobs listed in this table to arrive at an appropriate PAQ rating for the newly rated job. Occupational specialists consult the histogram, median and job titles by level throughout the process of rating capabilities and tolerances and setting item limits. All the information available on the page enables job analysts to adhere to definitional standards. Near the bottom of the item definition screen below are data entry blanks to **Rate this Item** and **Limit this Item** which are next to hotlinks to **Instructions for Rating Items, Definition of Item Limits** and **Item**

Limits Decision Rule. Under the data entry blanks are **Next Item** and **Go to item** buttons, which purposes are self-explanatory. From Item #2 forward, a **Previous Item** button allows the occupational specialist to examine or change that rating. Below these buttons are commands to **Save Evaluation, Close Evaluation, Print** and to generate a ratings summary by clicking **Continue (Ratings Summary)**, which points to the **Summary of Ratings and Item Limits** page below.

Worker Rehabilitation Questionnaire

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| 1 Choose an Evaluation Method | 2 Setup / Open Case | 3 Select Database | 4 Rate Capabilities and Tolerances | 5 Ratings Summary | 6 Run Job Matching Analysis and Generate Reports |

Summary of Ratings and Item Limits

[40] [Go To Item] *(ber)*

Item #	Description	Rating	Limit
1	Reading words	3	
2	Using numbers	1.7	
3	Using graphics	1.5	
4	Using patterns	0.5	
5	Using information displays	1.5	
6	Using measuring devices	1.5	
7	Watching machines in use	1.7	
8	Watching things you are working with	3	
9	Watching features of nature	0.5	
10	Inspecting constructed things	2	
11	Watching people or animals	2.5	
12	Watching events around you	1.7	
13	Viewing artistic work	0	
14	Listening to speech	4	4
15	Listening to other sounds	0.7	
16	Touching	1.2	3
17	Smelling	0.5	
18	Tasting	0	
19	Using far vision	3	
20	Using depth vision	1	
21	Using color vision	3	
22	Hearing sound patterns	0.5	
23	Hearing differences in sounds	0.5	
24	Feeling body movement	0	
25	Body balancing	0.7	2
26	Deciding on condition or quality	1.7	

Definition of Item Limits

Item Limits Decision Rule

Review the Last Selected Item

Save All Changes

Print Ratings and Item Limits

☐ Show tip about setting an item limit on education

When all items are rated and limits set, if examination of the rating summary shows a need to change item ratings or limits, clicking position 4 of the navigation bar, **Rate Capabilities and Tolerances** returns to item definitions, where item numbers that need changing can be entered into the blank next to the **Go to item** button.

When no further changes in capability/tolerance ratings are necessary, click position 5 of the navigation bar, **Run Job Matching Analysis and Generate Reports**, as illustrated below (see how to read a report).
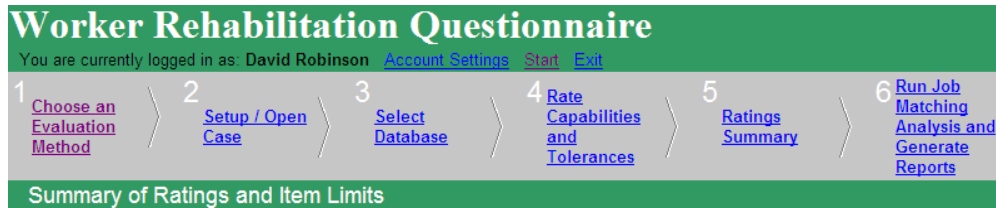
Using the Reference Job to Generate a WRQ Report: A reference job may be the individual's last job, longest-held job, or a job the occupational specialist or someone else may wish to investigate. To generate a job-match by the reference job method, click the second choice, **Examine PAQ/WRQ ratings for one job,** in the **Choose an evaluation method** screen below.
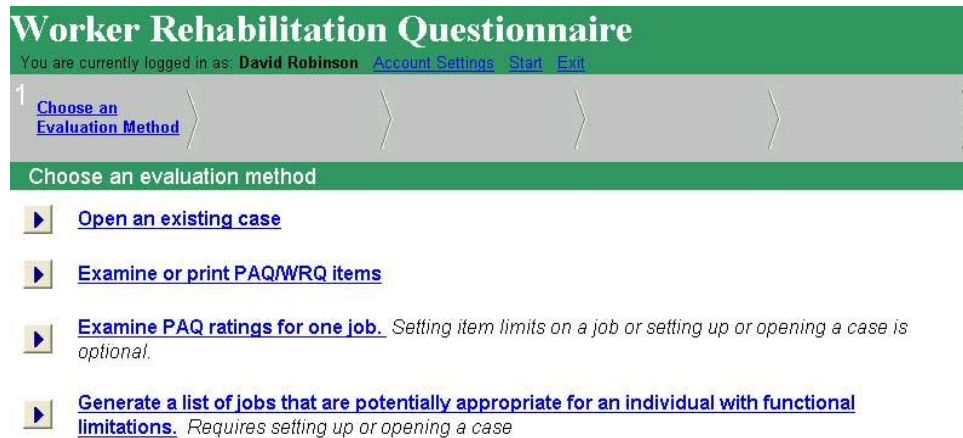
The reference job method compares PAQ ratings on the reference job with PAQ ratings on all other jobs in the database. To cite a case example, a Paint Shop Supervisor sustained a mild brain injury, chronic cervical pain and upper extremity weakness. The job of Paint Shop Supevisor can be checked for existence in the database, then selected, and item limits set to reflect those impairments. With these impairments programmed in, jobs listed on the output report will most closely match the job of Paint Shop Supervisor, but will not require performance on items with PAQ ratings that e item limits.

Clicking **Examine PAQ ratings for one job** in the **Choose an evaluation method** screen points the **Examine PAQ ratings for one job** screen below:

The **Examine PAQ ratings for one job** screen above offers hotlinks to jobs in the PAQ datbase that begin with each letter of the alphabet. However, clicking "P" for Paint Shop Supervisor turns up nothing because that job is listed under "S" for Supervisor, Paint Shop. (Similarly, jobs that include the word "Manager" are listed under "Manager, _____.") Clicking the letter "S" generates page after page of job title hotlinks. However, entering "paint" in the data blank and clicking the **Find Jobs** button at the bottom of the scren generates hotlinks to job titles with "paint" in them (including Supervisor, Paint Department) in the **Examine ratings for one job** screen below:

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1 Choose an Evaluation Method	2 View Ratings for One Job

Examine ratings for one job

List all jobs starting with letter:

A B C D E F G H I J K L M N O P Q R S T U V W XYZ

Select a job from the following list to view its ratings:

DOT Number	Job Title
550.684-018	Paint Mixer, Hand
741.687-010	Paint-Spray Inspector
599.382-010	Paint-Sprayer Operator, Automatic
840.381-010	Painter
741.687-014	Painter Helper, Spray
740.684-022	Painter, Brush
740.687-022	Painter, Panel Edge
840.381-018	Painter, Shipyard
970.381-026	Painter, Sign
741.684-026	Painter, Spray I
749.684-038	Painter, Touch-Up
845.381-014	Painter, Transportation Equipment
599.685-074	Painting-Machine Operator
741.685-010	Spray-Painting-Machine Operator
749.131-014	Supervisor, Paint Department
840.131-010	Supervisor, Painting

Clicking **Supervisor, Paint Department** in the **Examine ratings for one job** screen above lists that job's PAQ ratings in the **Examine ratings for Supervisor, Paint Department (749.131.014)** screen below (on which ratings on only the first 25 items of that screen are illustrated).

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You are currently logged in as: **David Robinson** Account Settings Start Exit

1	2	3		
Choose an Evaluation Method	View Ratings for One Job	Set Item Limits for This Job?		

Examine ratings for Supervisor, Paint Department (749.131-014)

Job Title:	Supervisor, Paint Department
DOT Number:	749.131-014
PAQ Number:	004057

Item Number	Item	Rating
1	Reading words	3
2	Using numbers	1.7
3	Using graphics	1.5
4	Using patterns	0.5
5	Using information displays	1.5
6	Using measuring devices	1.5
7	Watching machines in use	1.7
8	Watching things you are working with	3
9	Watching features of nature	0.5
10	Inspecting constructed things	2
11	Watching people or animals	2.5
12	Watching events around you	1.7
13	Viewing artistic work	0
14	Listening to speech	4
15	Listening to other sounds	0.7
16	Touching	1.2
17	Smelling	0.5
18	Tasting	0
19	Using far vision	3
20	Using depth vision	1
21	Using color vision	3
22	Hearing sound patterns	0.5
23	Hearing differences in sounds	0.5
24	Feeling body movement	0
25	Body balancing	0.7
26	Deciding on condition or quality	1.7
27	Inspecting	3.7
28	Estimating speed of moving parts	0
29	Estimating the speed of moving objects	2
30	Estimating speed of processes	1.5
31	Estimating amount	3
32	Estimating size	2

On the **Examine ratings for Supervisor, Paint Department (749.131.014)** screen above, **Set Item Limits for this Job?** will blink in position 3 on the navigation bar. Clicking that hotlink points to the **Summary of Ratings and Item Limits** page below (again showing only the first page of items):

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You are currently logged in as: **David Robinson** Account Settings Start Exit

| 1 Choose an Evaluation Method | 2 Setup / Open Case | 3 Select Database | 4 Rate Capabilities and Tolerances | 5 Ratings Summary | 6 Run Job Matching Analysis and Generate Reports |

Summary of Ratings and Item Limits

[40] [Go To Item] *ber)*

Item #	Description	Rating	Limit
1	Reading words	3	
2	Using numbers	1.7	
3	Using graphics	1.5	
4	Using patterns	0.5	
5	Using information displays	1.5	
6	Using measuring devices	1.5	
7	Watching machines in use	1.7	
8	Watching things you are working with	3	
9	Watching features of nature	0.5	
10	Inspecting constructed things	2	
11	Watching people or animals	2.5	
12	Watching events around you	1.7	
13	Viewing artistic work	0	
14	Listening to speech	4	4
15	Listening to other sounds	0.7	
16	Touching	1.2	3
17	Smelling	0.5	
18	Tasting	0	
19	Using far vision	3	
20	Using depth vision	1	
21	Using color vision	3	
22	Hearing sound patterns	0.5	
23	Hearing differences in sounds	0.5	
24	Feeling body movement	0	
25	Body balancing	0.7	2

Definition of Item Limits

Item Limits Decision Rule

Review the Last Selected Item

Save All Changes

Print Ratings and Item Limits

☐ Show tip about setting an item limit on education

Hotlinks to item definitions and rating scale anchors are available for rater guidance on this screen. Since the Paint Shop Supervisor's disability involved mild cognitive problems, chronic neck pain and upper extremity weakness, limits on Item #14 Listening to speech, Item# 16 Touching, Item #25 Body balancing and other items were appropriate. However, this example illustrates only the first page of this screen. In the **Limit** column, we entered a 4 on Listening to speech, which states our impression that he can do as much as a 4, but no more (see the item limits decision rule). Item #16 Touching, shows an item limit of 3. Notice that the PAQ rating for Item #16 is only 1.2. Setting the item limit at 3 acknowleges that the person can perform the Touching component of Supervisor, Paint Department's job, but if a job with significantly higher requirements for touching turned out to be

a close match, that job will be listed in the proper section of the report, i.e., the list of jobs that have requirements in excess of limits. Similarly, an item limit of 2 on Item #25 Body balancing is enough for Supervisor, Paint Department, for which the PAQ rating is 0.7. Closest-matching jobs that require body balancing >2 are listed with other jobs that have requirements in excess of item limits.

Just below the navigation bar in the **Summary of Ratings and Item Limits** screen above is a data entry blank with **40** in it to the left of the **Go To Item** button. Clicking this button will point to Item #40 Using the hands directly to change things, where we would set an item limit of 3. This example does not actually show an item limit on Item #40, just the existence of the **Go To Item** data entry blank that points to that item. Results of clicking the **Review the Last Selected Item** icon on the right of that screen are self-explantory. After setting item limits, click the **Print Ratings and Item Limits** icon to scrutinize the ratings and print a hard copy, if desired. Clicking **Save All Changes** points to the **Choose where to save exam screen** below (see how to set up a case).

After entering data on this screen, click either the **Save and Continue** button, which returns to the **Summary of Ratings and Item Limits** screen below, or to a case name, such as **DR**.

When satisfied with ratings and limits, click the sixth choice in the navigation bar to **Run the Job Matching Analysis and Generate Reports.** Unless the icon **Show tip about setting an item limit** is unchecked, the following tip to consider setting an item limit on Item #146 Education appears:
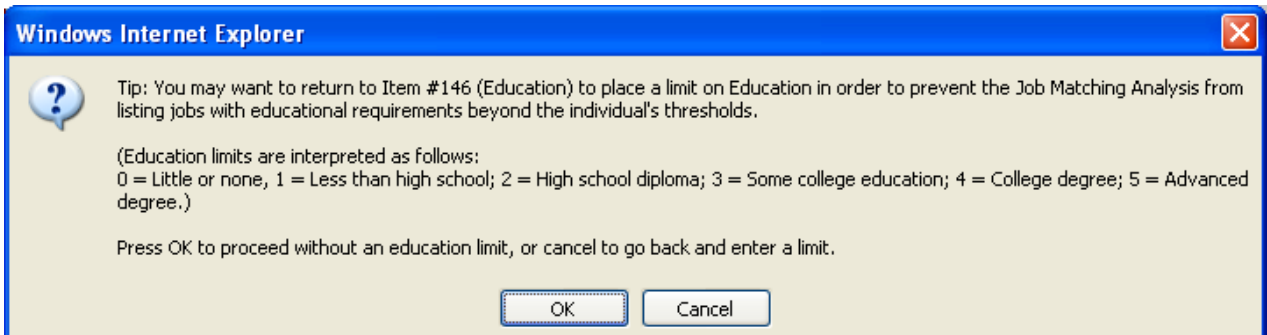
When an individual is unlikely by circumstances, resources, motivation or some other factor to get further education, it does not make sense to list closest-matching jobs that require more education than the individual is likely to acquire. In that case, it may be useful to set an item limit on Item #146, Education, to prevent the job matching analysis from listing jobs with unrealistic educational requirements.

After either setting an item limit on Education or by suppressing that tip, this **Please Wai**t message appears:

While waiting for the report, the job-matching algorithm is matching ratings of individual capabilities and tolerances with job analysis ratings of all 2,491 jobs in the PAQ database and sending jobs to appropriate locations on the job-matching report. See the job-matching algorithm and how to read a report.

References

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