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O*NET® Analyst Ratings of Occupational Abilities: Analysis Cycle 25 Results

Final Report

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Introduction

The Occupational Information Network (O*NET) is a comprehensive system developed by the U.S. Department of Labor that provides information for over 900 occupations within the U.S. economy. This information is maintained in a comprehensive database. To keep the database current, the National Center for O*NET Development is involved in a continual data collection process to identify and maintain current information on the characteristics of workers and jobs. The information that populates the O*NET database is collected from a variety of sources, including incumbents, occupational experts, and occupational analysts. Targeted job incumbents provide ratings on occupational tasks, generalized work activities (GWAs), knowledge, education and training, work styles, and work context (WC) areas. Occupational analysts collect important and level information regarding the abilities and skills associated with these occupations. It should be noted that there are theoretical or philosophical reasons for preferring one rater group to the other for collecting different data types. For example, incumbents are generally more familiar with the day-to-day duties of their jobs; therefore, they are the best source of information regarding tasks and GWAs. In contrast, it is likely that trained analysts understand the ability and skill constructs better than incumbents and, therefore, should provide the ability and skill data (Tsacoumis, 2007). Granted, it is imperative that occupational analysts have detailed occupation information to rate the ability and skill constructs. It has also been suggested that some incumbents deliberately inflate their ratings to influence policy decisions regarding, for example, compensation and training (Morgeson et al., 2004). Given these considerations, occupational analysts, as opposed to incumbents, provide the ability and skill information in the O*NET database.

This report focuses on results about the ability ratings only. Abilities are "[…] relatively enduring attributes of an individual's capability for performing a particular range of different tasks" (Fleishman et al., 1999, p. 175). Abilities are sometimes referred to as traits as they tend to remain stable over long periods. The 52 O*NET abilities cover performance applicable to a broad range of jobs in the world's economy and are grouped into four categories within the O*NET content model: cognitive, psychomotor, physical, and sensory-perceptual.

Occupational analysts are provided with relevant occupational information to facilitate the ability rating process. Trained occupational analysts are responsible for rating the importance and level of the 52 abilities for each of the O*NET occupations. More specifically, eight trained occupational analysts provided ratings for each occupation. For a description of the entire analyst data collection process, including the preparation and distribution of the occupational data, the steps associated with the ratings process, and the collection and management of the ability ratings, see *O*NET Analyst Ratings of Occupational Abilities: Procedures Update* (Fleisher & Tsacoumis, 2012) and *O*NET Analyst Ratings Occupational Ratings: Linkage Revisit* (Reeder & Tsacoumis, 2015).

To ensure a controlled data collection and management process, occupational data are collected in groups or "analysis cycles." This report describes the results from the data collection process for the 25th analysis cycle of 101 occupations. Reports describing each of the previous cycles are available at https://www.onetcenter.org/research.html?c=KSA. Results for subsequent cycles will be reported in separate reports. For a description of the O*NET Data Collection Publication Schedule, please see

https://www.onetcenter.org/ombclearance.html#schedule. Appendix A includes a listing of the IDI codes and Occupational Titles addressed in Cycle 25.

Evaluation of Cycle 25 Analyst Ratings

As mentioned above, occupational analysts provided ratings on the importance and level of the 52 abilities for each of the 101 occupations in Cycle 25. The mean, standard deviation, and standard error of the mean (SE_M) of the importance and level ratings were computed. These results are shown in Appendix B.

We performed four sets of analyses to evaluate the ratings that occupational analysts provided. First, we focused on identifying the data that may be difficult to interpret based on limited agreement among raters or because there is an indication that the ability level rating is not relevant for a specific occupation. Thus, a set of recommended suppression criteria was established that flagged (a) an ability level rating as not relevant to an occupation because of low importance ratings, (b) an ability with too little agreement in importance ratings across raters for a particular occupation, and (c) an ability with too little agreement in level ratings across raters for a particular occupation.

The remaining three sets of analyses focused on computing measures of interrater agreement and interrater reliability. Poor agreement, as indicated by low reliability estimates, may suggest confusion about the constructs, potentially due to the nature of the construct definition or rater training. Therefore, the second analysis involved estimating interrater agreement among the eight raters in each rating group. In the third analysis, we computed the interrater reliability of the raters to determine the extent to which raters agreed about the order of and relative distance between constructs on a particular scale (i.e., importance or level) within a particular occupation. This analysis provides information regarding the consistency across raters in terms of how they rate the required level or relative importance of the 52 ability constructs to performance in a particular occupation. Finally, in the fourth analysis, we computed another interrater reliability estimate to examine the consistency of ratings across occupations within constructs. This type of interrater reliability focuses on the extent to which raters agree about the order of and relative distance between occupations on a particular scale for a particular construct. The following sections describe each of the four sets of analyses in greater detail.

Analysis 1: Cycle 25 Recommended Data Flags

Three distinct criteria were established to flag the ability data. All three flags affect the presentation of publicly available data (e.g., O*NET OnLine, My Next Move, O*NET Web Services). First, the level rating of an ability was flagged as not relevant for a particular occupation if six or more of the eight occupational analysts rated its importance as one (1), the lowest possible rating. Thus, the level rating of an ability is considered "not relevant" when that construct is not important for performance in a particular occupation. For example, in the Cycle 25 data, the level ratings for Peripheral Vision were considered not relevant for several occupations, such as Budget Analysts (IDI: 00054.04.1) and Solar Sales Representatives and Assessors (IDI: 01669.02.1), because Peripheral Vision was not considered important for performance in these occupations. In this cycle, there were 970 not relevant flags (see Table 1 for the number of not relevant flags across the past 10 cycles). To facilitate the interpretation of these results, it should be noted that there are 5,252 sets of ratings (101 occupations x 52 abilities) in the current cycle. Given this, 18.47% (970/5,252) of the ability ratings were flagged as not relevant. The average percentage of ability ratings flagged as not relevant across the previous 24 cycles is 18.92% (*SD* = 4.93%); thus, the percentage of ratings flagged in the

current cycle is below the average across previous cycles. Generally, the abilities flagged as not relevant for a large number of occupations in Cycle 25 were also flagged as not relevant for a large number of occupations in previous cycles (e.g., Dynamic Flexibility, Night Vision, Peripheral Vision). Given that these constructs capture fairly specific physical or sensory capabilities intuitively not required for many occupations, these results are not surprising.

The remaining two criteria for flagging an ability for a particular occupation involve the recommended suppression of any ability importance or level mean rating that had an SE_M greater than 0.51. These criteria were established to capture those ratings deemed to have insufficient agreement across raters. The value of 0.51 was selected because 1.00/1.96 = 0.51. An SE_M greater than 0.51 means that the upper and lower bounds of the confidence interval are more than one scale point away from the observed mean. There were no instances in Cycle 25 where the mean importance rating was flagged for insufficient agreement. In fact, no importance ratings received flags for an SE_M greater than 0.51 since Cycle 3. The results of the suppression criteria for level for the past 10 cycles (Cycles 16-25) are presented in Table 2. There were 14 insufficient agreement flags for level ratings in Cycle 25, with the highest number of flags occurring for Wrist Finger Speed and Auditory Attention. The percentage of flags indicating insufficient agreement for level ratings in Cycle 25 was 0.27%. This is higher than Cycle 24 (0.00%) but lower than Cycle 23, which had 0.63%.

Dating back to Cycle 1, a decreasing trend exists across cycles with respect to the percentage of ability level ratings flagged for having a large SE_M (see Tables 1 and 2 in Reeder & Tsacoumis, 2015 for results from Cycles 1-16 and subsequent annual reports for results from the following analysis cycles). Although the SE_M values have decreased over time, they have likely reached a lower asymptote in recent cycles as it is difficult to consistently obtain rates lower than 0.05-0.15% of the ratings. Exceptions in which there have been increases in flagged ratings across the cycles, such as the increase observed for Cycle 25 and Cycle 23, have been relatively rare. The increase in agreement observed in cycles over time could be attributable to the fact that most of the occupations rated have also been rated in a previous cycle, and slightly revised rating procedures were introduced to accommodate this large percentage of repeat occupations (Fleisher & Tsacoumis, 2012). In contrast, the decrease in agreement observed in Cycle 25 and Cycle 23 could be attributed to the fact that more “new” occupations were rated. In particular, in Cycle 25, 21 of the 101 occupations examined were treated as new occupations due to the O*NET-SOC 2019 taxonomy update (Green & Allen, 2020; Gregory et al., 2019). In Cycle 23, 32 of 80 occupations examined were new occupations arising from the same taxonomy update. It seems reasonable that agreement might be slightly lower for these cycles because analysts did not have prior mean ratings for these occupations as a source of information to inform their current ratings. That said, these findings suggest there remains a high level of agreement among the occupational analysts for Cycle 25 and prior cycles. The detailed results of the recommended data flags and suppression criteria are depicted by the shaded cells in the results presented in Appendix B.

Analysis 2: Cycle 25 Interrater Agreement

Interrater agreement was assessed to determine the level of absolute agreement among the occupational analysts in ratings within a construct for a particular occupation. Measures of interrater agreement index the extent to which the eight raters provided the same rating regarding the level of an ability (e.g., Written Comprehension) required to perform within a particular occupation. To examine agreement, we calculated the standard deviation (*SD*) of ratings across occupational analysts for a given construct and scale for each occupation and the SE_M of these ratings. For both indices, lower values indicate greater agreement and vice versa.

Table 1. Number of Times Ability Level Flagged as Not Relevant

	Element Name	Cycle 16 (*N* = 102)	Cycle 17 (*N* = 116)	Cycle 18 (*N* = 110)	Cycle 19 (*N* = 90)	Cycle 20 (*N* = 100)	Cycle 21 (*N* = 100)	Cycle 22 (*N* = 100)	Cycle 23 (*N* = 80)	Cycle 24 (*N* = 90)	Cycle 25 (*N* = 101)
1	Oral Comprehension	0	0	0	0	0	0	0	0	0	0
2	Written Comprehension	0	0	0	0	0	0	0	0	0	0
3	Oral Expression	0	0	0	0	0	0	0	0	0	0
4	Written Expression	0	0	0	0	0	0	0	0	0	0
5	Fluency of Ideas	0	0	1	0	0	0	0	0	0	0
6	Originality	0	0	0	0	0	0	0	0	0	0
7	Problem Sensitivity	0	0	0	0	0	0	0	0	0	0
8	Deductive Reasoning	0	0	0	0	0	0	0	0	0	0
9	Inductive Reasoning	0	0	0	0	0	0	0	0	0	0
10	Information Ordering	0	0	0	0	0	0	0	0	0	0
11	Category Flexibility	0	0	0	0	0	0	0	0	0	0
12	Mathematical Reasoning	0	0	1	0	0	0	0	1	1	1
13	Number Facility	0	0	1	0	0	0	0	1	1	0
14	Memorization	0	0	0	0	0	0	0	0	0	0
15	Speed of Closure	0	0	0	0	0	0	1	0	0	0
16	Flexibility of Closure	0	0	0	0	0	0	0	0	0	0
17	Perceptual Speed	0	0	0	0	0	0	0	0	0	0
18	Spatial Orientation	32	48	51	50	63	52	50	33	42	46
19	Visualization	0	0	0	0	0	0	0	0	0	0
20	Selective Attention	0	0	0	0	0	0	0	0	0	0
21	Time Sharing	0	0	0	0	0	0	0	0	0	0
22	Arm-Hand Steadiness	10	12	10	14	28	17	16	7	15	14
23	Manual Dexterity	8	15	11	19	30	21	14	8	15	20
24	Finger Dexterity	5	0	0	1	3	0	1	2	4	8
25	Control Precision	10	12	9	19	33	16	13	11	15	21
26	Multilimb Coordination	15	26	25	27	45	27	18	22	25	38
27	Response Orientation	28	38	42	41	55	40	31	28	30	49
28	Rate Control	26	35	39	42	59	44	44	29	32	42
29	Reaction Time	23	33	38	38	54	35	32	30	27	40
30	Wrist-Finger Speed	4	11	17	19	26	30	14	2	5	2
31	Speed of Limb Movement	30	57	59	48	63	55	48	50	46	71
32	Static Strength	19	32	35	31	46	34	25	26	30	43
33	Explosive Strength	28	40	46	44	63	53	46	35	40	47

Table 1. (Continued)

	Element Name	Cycle 16 (*N* = 102)	Cycle 17 (*N* = 116)	Cycle 18 (*N* = 110)	Cycle 19 (*N* = 90)	Cycle 20 (*N* = 100)	Cycle 21 (*N* = 100)	Cycle 22 (*N* = 100)	Cycle 23 (*N* = 80)	Cycle 24 (*N* = 90)	Cycle 25 (*N* = 101)
34	Dynamic Strength	15	28	29	34	43	36	34	21	30	29
35	Trunk Strength	0	1	0	0	1	1	0	0	0	0
36	Stamina	23	38	37	32	50	38	32	33	33	45
37	Extent Flexibility	17	32	31	31	49	36	28	23	30	36
38	Dynamic Flexibility	79	97	99	78	87	87	85	59	80	91
39	Gross Body Coordination	23	40	38	36	53	37	32	35	33	48
40	Gross Body Equilibrium	26	41	38	37	53	38	32	35	34	46
41	Near Vision	0	0	0	0	0	0	0	0	0	0
42	Far Vision	0	0	0	0	0	0	0	0	0	0
43	Visual Color Discrimination	0	0	0	0	1	0	0	0	0	0
44	Night Vision	42	63	65	60	75	69	64	43	48	58
45	Peripheral Vision	42	57	63	59	71	66	59	42	47	57
46	Depth Perception	6	6	11	8	16	12	9	13	7	7
47	Glare Sensitivity	39	54	61	56	69	65	58	43	47	54
48	Hearing Sensitivity	0	0	0	0	0	0	1	0	0	0
49	Auditory Attention	0	0	0	0	0	1	0	0	0	0
50	Sound Localization	43	55	62	57	70	65	61	39	46	57
51	Speech Recognition	0	0	0	0	0	0	0	0	0	0
52	Speech Clarity	0	0	0	0	0	0	0	0	0	0
	Total Flags out of all possible ability ratings	11.18% (593/5304)	14.44% (871/6032)	16.07% (919/5720)	18.82% (881/4680)	23.19% (1206/5200)	18.75% (975/5200)	16.31% (848/5200)	16.13% (671/4160)	16.30% (763/4680)	18.47% (970/5252)

Table 2. Level Flags Due to Large SE_M

	Element Name	Cycle 16 (*N* = 102)	Cycle 17 (*N* = 116)	Cycle 18 (*N* = 110)	Cycle 19 (*N* = 90)	Cycle 20 (*N* = 100)	Cycle 21 (*N* = 100)	Cycle 22 (*N* = 100)	Cycle 23 (*N* = 80)	Cycle 24 (*N* = 90)	Cycle 25 (N = 101)
1	Oral Comprehension	0	0	0	0	0	0	0	0	0	0
2	Written Comprehension	0	0	0	0	0	0	0	0	0	0
3	Oral Expression	0	0	0	0	0	0	0	0	0	0
4	Written Expression	0	0	0	0	0	0	0	0	0	0
5	Fluency of Ideas	0	0	0	0	0	0	0	0	0	0
6	Originality	0	0	0	0	0	0	0	0	0	0
7	Problem Sensitivity	0	0	0	0	0	0	0	0	0	0
8	Deductive Reasoning	0	0	0	0	0	0	0	0	0	0
9	Inductive Reasoning	0	0	0	0	0	0	0	0	0	0
10	Information Ordering	0	0	0	0	0	0	0	0	0	0
11	Category Flexibility	0	0	0	0	0	0	0	0	0	0
12	Mathematical Reasoning	0	0	0	0	0	0	0	0	0	0
13	Number Facility	0	0	0	0	0	0	0	0	0	0
14	Memorization	0	0	0	0	0	0	0	0	0	0
15	Speed of Closure	0	0	0	0	0	0	0	0	0	0
16	Flexibility of Closure	0	0	0	0	0	0	0	0	0	0
17	Perceptual Speed	0	0	0	0	0	0	0	0	0	0
18	Spatial Orientation	0	1	0	0	0	0	0	1	0	2
19	Visualization	1	0	0	0	0	0	0	0	0	0
20	Selective Attention	0	0	0	0	0	0	0	0	0	0
21	Time Sharing	0	0	0	0	0	0	0	0	0	0
22	Arm-Hand Steadiness	0	0	0	0	0	1	0	0	0	0
23	Manual Dexterity	0	0	0	0	0	0	0	1	0	0
24	Finger Dexterity	1	0	1	0	0	0	0	0	0	1
25	Control Precision	2	0	0	0	0	0	0	0	0	0
26	Multilimb Coordination	0	0	0	0	1	0	0	2	0	0
27	Response Orientation	1	1	0	0	0	0	0	1	0	0
28	Rate Control	0	0	0	0	0	0	0	3	0	0
29	Reaction Time	0	0	0	0	0	0	0	4	0	1
30	Wrist-Finger Speed	1	0	0	0	0	0	0	6	0	6
31	Speed of Limb Movement	1	0	0	0	0	0	0	3	0	0
32	Static Strength	0	0	0	0	0	0	0	0	0	0
33	Explosive Strength	0	0	0	1	0	0	0	0	0	0

Table 2. (Continued)

	Element Name	Cycle 16 (*N* = 102)	Cycle 17 (*N* = 116)	Cycle 18 (*N* = 110)	Cycle 19 (*N* = 90)	Cycle 20 (*N* = 100)	Cycle 21 (*N* = 100)	Cycle 22 (*N* = 100)	Cycle 23 (*N* = 80)	Cycle 24 (*N* = 90)	Cycle 25 (N = 101)
34	Dynamic Strength	0	0	0	0	0	0	0	0	0	0
35	Trunk Strength	0	0	0	0	0	0	0	0	0	0
36	Stamina	0	0	0	0	0	0	0	0	0	0
37	Extent Flexibility	0	0	0	0	0	0	0	1	0	0
38	Dynamic Flexibility	1	0	0	0	1	0	0	0	0	0
39	Gross Body Coordination	0	0	0	0	0	0	0	0	0	0
40	Gross Body Equilibrium	0	0	0	0	0	0	0	0	0	0
41	Near Vision	0	2	0	1	0	0	0	0	0	0
42	Far Vision	0	0	0	0	0	0	0	0	0	0
43	Visual Color Discrimination	0	0	0	0	0	0	0	0	0	1
44	Night Vision	0	0	0	0	0	0	0	0	0	0
45	Peripheral Vision	0	0	0	0	0	0	0	0	0	0
46	Depth Perception	0	0	0	0	0	0	0	0	0	0
47	Glare Sensitivity	0	0	0	0	0	0	0	0	0	0
48	Hearing Sensitivity	0	0	0	0	0	0	0	0	0	0
49	Auditory Attention	0	0	0	0	0	0	0	1	0	3
50	Sound Localization	0	0	0	0	0	0	0	3	0	0
51	Speech Recognition	0	0	0	0	0	0	0	0	0	0
52	Speech Clarity	0	0	0	0	0	0	0	0	0	0
	Total Flags out of all possible ability ratings	0.15% (8/5304)	0.07% (4/6032)	0.02% (1/5720)	0.04% (2/4680)	0.04% (2/5200)	0.02% (1/5200)	0.00% (0/5200)	0.63% (26/4160)	0.00% (0/4680)	0.27% (14/5252)

A summary of these results is shown in Appendix C. The columns labeled "Mean of *M*s" show the mean of the occupational analysts' mean importance and level ratings across the 52 abilities for each occupation.[1] The columns labeled "Median of *SD*s" show the median of the *SD*s associated with each mean importance and level rating across the 52 abilities for each occupation. Finally, the columns labeled "Median of SE_Ms" show the median of the SE_Ms associated with each mean importance and level rating across the 52 abilities for each occupation.

The importance ratings across all Cycle 25 occupations had a median *SD* of 0.35 and a median SE_M of 0.13. The level ratings across occupations also had a median *SD* of 0.35 and a median SE_M of 0.13. These values are identical to those of Cycle 24 (median SD = 0.35, median SEM = 0.13) and reflect strong agreement.

Analysis 3: Cycle 25 Interrater Reliability—Across Constructs within Occupations

To examine the interrater reliability of the Cycle 25 ratings, we calculated intraclass correlations (*ICC*[C, k]; McGraw & Wong, 1996) among the occupational analysts' ratings to assess consistency across constructs within occupations. This statistic indicates the degree of similarity in the rank ordering and relative distance between the abilities on a particular scale within an occupation. Our target level of interrater reliability is a median *ICC*(C, *k*) of 0.80 or greater. The value of 0.80 is judged to be a good rule of thumb that has been used in multiple contexts, including O*NET (e.g., Clement et al., 2003; McCloy et al., 1999; Rase & Tognetti-Stuff, 1983).

The results of these analyses are presented in Appendix D. The results revealed high levels of interrater reliability across the 101 Cycle 25 occupations. Specifically, the median *ICC* for importance ratings for the abilities across the occupations was 0.98 (*M* = 0.97, *SD* = 0.03). The median *ICC* for the level ratings was 0.98 (*M* = 0.97, *SD* = 0.03). The reliability for both the importance and level ratings exceeded the median target coefficient value of 0.80. In fact, all the reliability estimates were greater than 0.90, except for the importance and level reliability for three occupations (Fishing and Hunting Workers; Molders, Shapers, and Casters, Except Metal and Plastic; Railroad Brake, Signal, and Switch Operators and Locomotive Firers). Overall, the results support a very good level of reliability in the occupational analysts' ratings.

Analysis 4: Cycle 25 Interrater Reliability—Across Occupations within Constructs

Another way to evaluate the reliability of the occupational analysts' ratings is to examine the consistency of the ratings across occupations within constructs. This type of reliability is the extent to which raters agree about the order of and relative distance among occupations on a particular scale for a particular construct. For example, is there consistency across raters in how they differentiate among occupations on the required level of the ability of Oral Comprehension? To make this evaluation, McGraw and Wong's (1996) *ICC*(C, *k)* is calculated for each construct on each scale (instead of for each occupation on each scale as described above). Consequently, each of the 52 ability importance scale ratings will have a reliability value. A median *ICC*(C, *k*) across the construct ratings for a particular domain on a particular scale of 0.80 or greater is the target interrater reliability for this coefficient (e.g., the median reliability across 52 ability level ratings should be at least 0.80). Again, the value of 0.80 has been judged to be a good rule of thumb.

[1] Although the mean is not a measure of agreement, it can affect the potential range of the *SD* and SE_M.

This reliability analysis was conducted for abilities across all occupations for the past 10 cycles,[2] and results are presented in Table 3. The reliability analyses are based on 989 rating targets.[3] The values in the columns titled *ICC*(*C*,1) reflect the single-rater reliabilities, whereas the values in the columns titled *ICC*(*C*,8) reflect the reliability for eight raters. Overall, the median *ICC*(*C*,8) across the construct ratings for importance was 0.93 (*M* = 0.91, *SD* = 0.07) and for level was 0.95 (*M* = 0.94, *SD* = 0.04). This indicates that on the whole, the reliabilities achieved the target level. Most abilities had high *ICC*(*C*,8) reliabilities for both importance and level. In fact, there were 37 abilities with reliabilities greater than 0.90 for the importance ratings and 45 abilities with reliabilities greater than or equal to 0.90 for the level ratings (e.g., Spatial Orientation).

Table 3. Interrater Reliabilities and Standard Errors of Measurement for Abilities Across Occupations in Cycles 16 through 25

		Cycles 16 through 25 (*N* = 989)					
		Importance			Level		
	Ability	*ICC(C,1)*	*ICC(C,8)*	*SE*	*ICC(C,1)*	*ICC(C,8)*	*SE*
1	Oral Comprehension	0.55	0.91	0.12	0.72	0.95	0.14
2	Written Comprehension	0.69	0.95	0.13	0.81	0.97	0.13
3	Oral Expression	0.63	0.93	0.12	0.75	0.96	0.13
4	Written Expression	0.70	0.95	0.14	0.82	0.97	0.14
5	Fluency of Ideas	0.62	0.93	0.14	0.71	0.95	0.16
6	Originality	0.64	0.93	0.14	0.73	0.96	0.16
7	Problem Sensitivity	0.48	0.88	0.14	0.68	0.95	0.15
8	Deductive Reasoning	0.57	0.91	0.13	0.72	0.95	0.15
9	Inductive Reasoning	0.62	0.93	0.13	0.74	0.96	0.15
10	Information Ordering	0.37	0.83	0.15	0.58	0.92	0.14
11	Category Flexibility	0.40	0.84	0.14	0.58	0.92	0.15
12	Mathematical Reasoning	0.70	0.95	0.14	0.80	0.97	0.16
13	Number Facility	0.62	0.93	0.14	0.74	0.96	0.17
14	Memorization	0.38	0.83	0.15	0.51	0.89	0.16
15	Speed of Closure	0.36	0.82	0.15	0.51	0.89	0.17
16	Flexibility of Closure	0.40	0.84	0.15	0.55	0.91	0.16
17	Perceptual Speed	0.41	0.85	0.15	0.52	0.90	0.15
18	Spatial Orientation	0.72	0.95	0.13	0.75	0.96	0.18
19	Visualization	0.56	0.91	0.15	0.65	0.94	0.17
20	Selective Attention	0.20	0.66	0.13	0.34	0.81	0.14
21	Time Sharing	0.33	0.80	0.15	0.41	0.85	0.16
22	Arm-Hand Steadiness	0.84	0.98	0.14	0.86	0.98	0.17
23	Manual Dexterity	0.83	0.98	0.14	0.86	0.98	0.17
24	Finger Dexterity	0.70	0.95	0.15	0.72	0.95	0.20

[2] Starting in Cycle 22, interrater reliability analyses across occupations were limited to the past 10 cycles to reflect more recent trends. Previous reports (e.g., Reeder et al., 2020) include all cycles.
[3] A rating target refers to a unique instance of an occupation. An occupation can contribute more than one rating target if it has been rated more than once across data collection cycles.

Table 3. (Continued)

		Cycles 16 through 25 (*N* = 989)					
		Importance			Level		
	Ability	*ICC(C,1)*	*ICC(C,8)*	*SE*	*ICC(C,1)*	*ICC(C,8)*	*SE*
25	Control Precision	0.83	0.97	0.14	0.86	0.98	0.18
26	Multilimb Coordination	0.83	0.98	0.14	0.88	0.98	0.17
27	Response Orientation	0.76	0.96	0.14	0.81	0.97	0.19
28	Rate Control	0.80	0.97	0.13	0.83	0.98	0.17
29	Reaction Time	0.83	0.98	0.13	0.87	0.98	0.18
30	Wrist-Finger Speed	0.46	0.87	0.16	0.54	0.90	0.23
31	Speed of Limb Movement	0.61	0.93	0.13	0.67	0.94	0.19
32	Static Strength	0.84	0.98	0.13	0.89	0.98	0.16
33	Explosive Strength	0.52	0.90	0.14	0.53	0.90	0.21
34	Dynamic Strength	0.69	0.95	0.14	0.78	0.97	0.18
35	Trunk Strength	0.65	0.94	0.16	0.67	0.94	0.21
36	Stamina	0.80	0.97	0.12	0.86	0.98	0.15
37	Extent Flexibility	0.82	0.97	0.13	0.88	0.98	0.17
38	Dynamic Flexibility	0.42	0.85	0.10	0.42	0.85	0.14
39	Gross Body Coordination	0.81	0.97	0.11	0.86	0.98	0.15
40	Gross Body Equilibrium	0.79	0.97	0.11	0.82	0.97	0.16
41	Near Vision	0.26	0.73	0.15	0.41	0.85	0.15
42	Far Vision	0.38	0.83	0.15	0.47	0.88	0.16
43	Visual Color Discrimination	0.56	0.91	0.15	0.63	0.93	0.19
44	Night Vision	0.69	0.95	0.11	0.70	0.95	0.16
45	Peripheral Vision	0.75	0.96	0.10	0.76	0.96	0.15
46	Depth Perception	0.67	0.94	0.14	0.75	0.96	0.19
47	Glare Sensitivity	0.75	0.96	0.11	0.79	0.97	0.16
48	Hearing Sensitivity	0.53	0.90	0.15	0.58	0.92	0.20
49	Auditory Attention	0.50	0.89	0.15	0.58	0.92	0.19
50	Sound Localization	0.70	0.95	0.11	0.73	0.96	0.16
51	Speech Recognition	0.40	0.84	0.14	0.56	0.91	0.15
52	Speech Clarity	0.52	0.90	0.14	0.67	0.94	0.15

Note. These *ICC*s indicate how consistently raters rated (rank ordered) occupations on a given ability.

SE = Standard error of measurement = Observed score standard deviation times the square root of one minus *ICC*(*C*,8).

The lowest importance *ICC*(*C*,8) reliabilities were for Selective Attention and Near Vision (0.66 and 0.73, respectively). These abilities were among those that had lower importance reliabilities (around 0.70 or less) in Cycles 23 and 24 as well. These were the only two constructs with importance *ICC*(*C*,8) values less than 0.80 in Cycle 25. The construct with the lowest level rating reliability was Selective Attention (0.81). No constructs had level reliabilities less than 0.80, replicating a finding from Cycle 24.

Some variation in calculated values is likely to occur by chance. As previously described, the goal was for the *ICC*(*C*,8) reliabilities to have a median value of 0.80 or greater across constructs, which was achieved for both importance and level (0.93 and 0.95, respectively). These results suggest a very good level of agreement among the raters with respect to the order and relative distance among occupations on specific constructs for importance and level.

Summary

The main findings of the analysis of Cycle 25 analyst ratings were as follows:

- About 82% of the ability ratings were considered important for performance in a given occupation. Constructs that were flagged as not relevant for performance were very similar to those flagged in previous cycles and were not unexpected, given the specificity of those abilities.
- No importance ratings were flagged based on a SE_M greater than 0.51.
- Although still low in an absolute sense, a higher percentage of level ratings (0.27%) were flagged for having an SEM greater than 0.51 compared to the prior cycle (0.00%). This is likely due to some of the Cycle 25 occupations having not been rated previously due to the O*NET-SOC 2019 taxonomy updates (Green & Allen, 2020; Gregory et al., 2019).
- There was strong interrater agreement for this cycle, as evidenced by the overall low medians of SE_M values.
- All within-occupation *ICC* reliability estimates were well above the target value of 0.80. These high levels of interrater reliability indicate that the occupational analysts rank ordered the abilities within each occupation similarly on both importance and level.
- Nearly all across-occupation *ICC* reliability estimates were above the target value of 0.80. These high levels of interrater reliability indicate that analysts rank ordered occupations within each ability similarly on both importance and level.

These results suggest that the analysts are calibrated with one another and understand the abilities and associated definitions. Agreement was high, and there is clear evidence regarding the high quality of the data. Nevertheless, project staff will continue to review the constructs and data collection process with returning analysts before each new cycle and, as needed, throughout the cycle.

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