

# Updating Higher-order Work Style Dimensions in the O\*NET Work Styles Taxonomy

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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 on over 900 occupations covering over 55,000 jobs within the U.S. economy. This information is maintained in a comprehensive database (National Center for O\*NET Development, 2025). To keep the database current, the National Center for O\*NET Development (hereafter referred to as "the Center") is involved in a continual data collection process to identify and maintain current information on the characteristics of workers and occupations. This report summarizes an update to the higher-order Work Style dimensions in the O\*NET Work Styles taxonomy. This work represents a follow-up to the Center's recent efforts to revisit and update the content of the Work Styles taxonomy (see Putka et al., 2024).

Work Styles constitute one type of worker attribute in the O\*NET Content Model. Before the Center's recent efforts to revisit the Work Styles taxonomy, Work Styles were formally defined within O\*NET as "personal characteristics that are work- and job-related" (Borman et al., 1999, p. 213); they are essentially non-clinical personality traits that are relevant to jobs, occupations, and the world of work more broadly. O\*NET's Work Styles were originally developed by Borman and colleagues (1995) based on a review of relevant literature (e.g., Industrial-Organizational [I-O] psychology, management, and personality), with a focus on content documenting extant taxonomies, structure, and internal relations, and the job- and work-relatedness of personality traits. Based on this review, they derived seven broad, higher-order Work Style dimensions and 17 more specific, lower-order Work Style dimensions that function as constituent elements of the broader dimensions. Work Styles were originally viewed as being of use in aiding personnel selection, employment counseling, and self-directed job search (Borman et al., 1995), and they remain an important part of the O\*NET Program's support for educational planning, career exploration, career guidance, job search, and organizational placement.

#### **Revisiting Work Styles in the O\*NET Content Model**

Until the Center's recent revisiting of the Work Styles taxonomy mentioned above, O\*NET's Work Styles had changed very little in the 30 years since their formulation. In light of the enormous growth in scholarship related to personality in the nearly 30 years since Borman and colleagues (1995) derived O\*NET's Work Styles, in early 2024, the Center decided to revisit the Work Styles portion of the O\*NET Content Model and update it in light of contemporary developments. This first phase of work involved (a) conducting a review and analysis of relevant literature on personality structure and personality traits relevant to work to inform revisions to the Work Styles, (b) conducting a review of strategies for scaling Work Styles for job analysis application to inform revisions to potential rating scales for Work Styles in O\*NET, (c) drafting updated Work Style content (i.e., higher-order and lower-order dimensions and descriptions) for the O\*NET Content Model, and (d) linking the draft Work Styles to O\*NET's Generalized Work Activities (GWAs) and Work Contexts (WCs) and using the results of that mapping to help finalize an updated set of Work Style dimensions.

The results of this "Phase 1" work led to a *provisional*, updated Work Styles taxonomy consisting of 21 lower-order, data-level Work Styles (i.e., Work Styles for which ratings will be



populated in the O\*NET database) and seven higher-order Work Style dimensions that reflect related groupings of the lower-order Work Styles. The taxonomy was viewed as "provisional" given the possibility that it would be revised as a result of analyses conduced as part of a second phase of work focused on developing and evaluating a method for populating Work Style ratings in O\*NET and using that method to populate updated Work Style ratings for all active, data-level occupations in O\*NET (see <a href="Putka et al., 2025">Putka et al., 2025</a>). Within the provisional taxonomy, Work Styles are defined as "personality tendencies exhibited at work that can affect how well someone performs a job". Table 1 provides the complete set of Work Style dimensions resulting from the first phase of work. Details on the development of these Work Styles are provided in <a href="Putka et al. (2024">Putka et al. (2024)</a>).

Table 1. Provisional Work Styles from Phase 1

Element Name	Description
Conscientiousness	A tendency to exhibit achievement-oriented behavior, dependability, attention to detail, self-confidence, and cautiousness at work.
Achievement Orientation	A tendency to establish and maintain personally challenging work-related goals, set high work-related standards, and exert high effort toward meeting those goals and standards.
Attention to Detail	A tendency to be detail-oriented, organized, and thorough in completing work.
Cautiousness	A tendency to be careful, deliberate, and risk-avoidant when making work-related decisions or doing work.
Dependability	A tendency to be reliable, responsible, and consistent in meeting work-related obligations.
Self-Confidence	A tendency to believe in one's work-related capabilities and ability to control one's work-related outcomes.
Extraversion	A tendency to exhibit leadership and socially oriented behavior at work.
Leadership Orientation	A tendency to lead, take charge, offer opinions, and provide direction at work.
Social Orientation	A tendency to seek out, enjoy, and be energized by social interaction at work.
Agreeableness	A tendency to exhibit cooperative and empathetic behavior towards others at work.
Cooperation	A tendency to be pleasant, helpful, and willing to assist others at work.
Empathy	A tendency to show concern for others and be sensitive to others' needs and feelings at work.
Honesty-Humility	A tendency to exhibit sincerity, humility, and integrity at work.
Humility	A tendency to be modest and humble when interacting with others at work.
Integrity	A tendency to be honest and ethical at work.
Sincerity	A tendency to be genuine and sincere in interactions with others at work, without concern for personal gain or self-interest.
Emotional Stability	A tendency to exhibit self-control and tolerate stress at work.
Self-Control	A tendency to remain calm and composed and to manage emotions effectively in response to criticism or difficult situations at work.
Stress Tolerance	A tendency to cope and function effectively in stressful situations at work.



Table 1. (Continued)

Element Name	Description
Openness	A tendency to exhibit adaptability, flexibility, intellectual curiosity, and innovation at work.
Adaptability	A tendency to be open to and comfortable with change, new experiences, or ideas at work.
Innovation	A tendency to be inventive, to be imaginative, and to adopt new perspectives on ways to accomplish work.
Intellectual Curiosity	A tendency to seek out and acquire new work-related knowledge and obtain a deep understanding of work-related subjects.
Tolerance for Ambiguity	A tendency to be comfortable with ambiguity and uncertainty at work.
Compound Dimensions	Work style dimensions that reflect a combination of elements from two or more broad personality domains.
Initiative	A tendency to be proactive and take on extra responsibilities and tasks that may fall outside of one's required work role.
Optimism	A tendency to exhibit a positive attitude and positive emotions at work, even under difficult circumstances.
Perseverance	A tendency to exhibit determination and resolve to perform or complete tasks in the face of difficult circumstances or obstacles at work.

Note. Lower-order Work Styles (indented) are grouped under higher-order Work Style dimensions.

#### Revisiting the Higher-order Work Style Dimensions<sup>1</sup>

During the second phase of Work Styles research described above, an updated method for populating Work Style ratings was developed and evaluated (see <a href="Putka et al. 2025">Putka et al. 2025</a>). As described in <a href="Putka et al. (2025">Putka et al. (2025)</a>, this method was used to generate Work Style ratings for all 891 active, data-level occupations in O\*NET 30.1 (using data from O\*NET 29.3 as inputs).

The higher-order Work Style dimensions that emerged from the first phase of work described above were viewed as preliminary by the Center and project team, given that at the time they were formulated, data were not available on the new Work Styles for all active, data-level occupations using the newly developed method detailed in <a href="Putka et al. (2025">Putka et al. (2025)</a>. Once such data became available, it allowed us to examine the factor structure underlying the ratings using the complete set of active, data-level occupations as the basis for analysis, and suggest revisions to the higher-order structure that reflected the observed empirical structure, should such a structure be deemed meaningful (e.g., the factor solution exhibits elements of simple structure, the resulting factors are substantively meaningful).

As described in Putka et al. (2025), we used a hybrid generative Al-expert rating method to generate Work Style ratings for all 891 active, data-level occupations in O\*NET 29.3. We then conducted a Principal Components Analysis (PCA) on the data with oblique (promax) rotation, and based on the results of a parallel analysis, arrived at a four-component solution<sup>2</sup>. The

<sup>&</sup>lt;sup>1</sup> Note, most of the text and tables in this section are drawn directly from Putka et al (2025).

<sup>&</sup>lt;sup>2</sup> We conducted a parallel analysis using and found a critical eigenvalue to use in evaluating the number of components to extract (Horn, 1965). We also examined three- and five-component solutions to evaluate whether they offered a more interpretable solution than the four-component solution; however, we found that the four-component solution provided the cleanest interpretation.



resulting solution accounted for 87.6% of the variance in the Work Style ratings, with 52.1% accounted for by the first factor, 15.9% by the second, 13.5% by the third, and 6.1% by the fourth. Table 2 provides the pattern matrix from the four-component PCA solution.

Table 2. Work Style Rating Principal Components Analysis Pattern Matrix

Work Style	Component										
Work Style	1	2	3	4							
Innovation	.99	03	08	.36							
Achievement Orientation	.95	.12	.13	07							
Intellectual Curiosity	.93	06	.30	.26							
Tolerance For Ambiguity	.87	17	05	01							
Initiative	.82	18	12	12							
Adaptability	.74	17	06	22							
Self-Confidence	.71	.00	11	46							
Perseverance	.68	.11	.08	48							
Leadership Orientation	.63	08	11	40							
Humility	10	-1.00	.27	.21							
Sincerity	.09	90	.04	07							
Empathy	.05	90	15	07							
Cooperation	.09	85	07	12							
Optimism	.05	74	44	17							
Social Orientation	.26	69	33	13							
Cautiousness	15	.10	.88	24							
Attention To Detail	.22	.06	.88	.16							
Dependability	05	24	.59	56							
Integrity	.29	31	.47	37							
Stress Tolerance	.12	16	.13	81							
Self-Control	.04	43	.09	69							

As shown in Table 2, four fairly substantively distinct components emerged from the analysis that we interpreted as follows:

- Component 1: Proactive and Growth Oriented
- Component 2: Interpersonally Oriented
- Component 3: Conscientious and Rule Oriented
- Component 4: Emotionally Resilient



Note that these components differ notably from the higher-order structure originally outlined in the development of the new set of Work Styles (see Putka et al., 2024). Table 3 provides a sideby-side comparison of the provisional higher-order structure identified in Putka et al. (2024) and the one based on the PCA above. One key reason for the differences observed here is that the provisional higher order structure identified by Putka et al (2024) was heavily informed by the body of past research on the factor structure underling indicators of individual personality (i.e., based on factor analytic work where individuals, rather than occupations were the units of analysis). In contrast, this was the first large scale work we know of that that looked at the factor structure of indicators personality-related requirements of occupations, where occupations, rather than individuals were the units of analysis. There is no reason to believe that these factor structures would be similar (i.e., that work styles would covary similarly across occupations as they do across), and assuming they do would be a variant on the well-known ecological fallacy (Robinson, 1950). Granted, in some domains, there is evidence of similarity when treating individuals vs. occupations as the units of analysis (e.g., emergence of RIASEC occupation interest themes at both the individual and occupational units of analysis; Holland, 1997), but for Work Styles that is clearly not the case.

Table 3. Comparison of PCA-Based Higher-order Work Style Dimensions and Higher-order Work Style Dimensions from Phase 1

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PCA-Based Higher-Order Dimensions/ Work Styles											
Proactive and Growth Oriented	A tendency to proactively pursue excellence through setting high standards, engaging in continuous learning, and persisting and adapting in the face of challenges and uncertainty at work.										
Innovation	A tendency to be inventive, to be imaginative, and to adopt new perspectives on ways to accomplish work.	Compound Dimension									
Achievement Orientation	A tendency to establish and maintain personally challenging work-related goals, set high work-related standards, and exert high effort toward meeting those goals and standards.	Conscientiousness									
Intellectual Curiosity	A tendency to seek out and acquire new work- related knowledge and obtain a deep understanding of work-related subjects.	Openness									
Tolerance for Ambiguity	A tendency to be comfortable with ambiguity and uncertainty at work.	Openness									
Initiative	A tendency to be proactive and take on extra responsibilities and tasks that may fall outside of one's required work role.	Compound Dimensions									
Adaptability	A tendency to be open to and comfortable with change, new experiences, or ideas at work.	Openness									



Table 3. (Continued)

PCA-Based Higher-Order Dimensions/ Work Styles	Description	Higher-Order Work Style Dimensions from Phase 1
Self-Confidence	A tendency to believe in one's work-related capabilities and ability to control one's work-related outcomes.	Conscientiousness
Perseverance	A tendency to exhibit determination and resolve to perform or complete tasks in the face of difficult circumstances or obstacles at work.	Compound Dimensions
Leadership Orientation	A tendency to lead, take charge, offer opinions, and provide direction at work.	Extraversion
Interpersonally Oriented	A tendency to engage with others in a positive, supportive, selfless, and considerate manner at work.	
Humility	A tendency to be modest and humble when interacting with others at work.	Honesty-Humility
Sincerity	A tendency to be genuine and sincere in interactions with others at work, without concern for personal gain or self-interest.	Honesty-Humility
Empathy	A tendency to show concern for others and be sensitive to others' needs and feelings at work.	Agreeableness
Cooperation	A tendency to be pleasant, helpful, and willing to assist others at work.	Agreeableness
Optimism	A tendency to exhibit a positive attitude and positive emotions at work, even under difficult circumstances.	Compound Dimensions
Social Orientation	A tendency to seek out, enjoy, and be energized by social interaction at work.	Extraversion
Conscientious and Rule Oriented	A tendency to approach work with careful attention to quality, reliability, and ethical standards while maintaining organized and thorough work practices.	
Cautiousness	A tendency to be careful, deliberate, and risk- avoidant when making work-related decisions or doing work.	Conscientiousness
Attention to Detail	A tendency to be detail-oriented, organized, and thorough in completing work.	Conscientiousness
Dependability	A tendency to be reliable, responsible, and consistent in meeting work-related obligations.	Conscientiousness
Integrity	A tendency to be honest and ethical at work.	Honesty-Humility
Emotionally Resilient	A tendency to maintain emotional stability and cope effectively in the face of adversity, criticism, or high-pressure situations at work.	
Stress Tolerance	A tendency to cope and function effectively in stressful situations at work.	Emotional Stability
Self-Control	A tendency to remain calm and composed and to manage emotions effectively in response to criticism or difficult situations at work.	Emotional Stability

Note. Higher-order dimensions are highlighted in light grey.



To further evaluate the substantive meaningfulness of these components, we produced component scores (using the standard, regression-based method) and summarized them by O\*NET occupation job zone and job family (see Tables 4 and 5, respectively). Additionally, Table 6 lists the top five and bottom five occupations on each Work Style component.

The pattern of results in Tables 4 through 6 appears to lend further credence to the meaningfulness of basing higher-order Work Style dimensions on the components. For example, as one might expect, the Proactive and Growth Oriented component correlated strongly and positively with job zone, where job zone five occupations exhibited the highest Proactive and Growth Oriented component scores on average. This finding is consistent with the notion that the higher the job zone, the more extensive the education and preparation needed to perform in the occupation. As another example, examination of component scores by job family revealed that job families with the highest Interpersonally Oriented component scores tended to have clear interpersonal elements to them (e.g., Community and Social Service, Healthcare Support, Healthcare Practitioners and Technical, and Personal Care and Service), and job families with the highest Conscientiousness and Rule Oriented component scores (Legal) and highest Emotionally Resilient component scores (Protective Service) tended to be very rule oriented, and stress-laden, respectively. This pattern of findings is further reinforced by examining occupations with the highest and lowest scores on each component in Table 6.11 (e.g., Clergy and Mental Health Counselors as the top Interpersonally Oriented occupations, occupations involving working with nuclear technology as the top Conscientious and Rule Oriented occupations, Air Traffic Controllers and protective service occupations as the top Emotionally Resilient occupations).

Table 4. Mean Work Style Component Scores by Job Zone

		Component												
Job Zone	n	Proactive and Growth Oriented	Interpersonally Oriented	Conscientious and Rule Oriented	Emotionally Resilient									
1	31	-1.29	90	-1.00	64									
2	289	97	45	26	14									
3	211	05	.05	.27	.11									
4	211	.86	.11	.06	.15									
5	149	.99	.84	.24	.06									

Note. Component scores are on a z-score metric. Component scores for the Interpersonally Oriented and Emotionally Resilient scores were multiplied by -1, so that higher scores reflect greater impact of Interpersonal Orientation and Emotional Resilience on job performance, respectively.



Table 5. Mean Work Style Component Scores by Job Family

		Component									
Job Family	n	Proactive and Growth Oriented	Interpersonally Oriented	Conscientious and Rule Oriented	Emotionally Resilient						
Architecture and Engineering	53	.77	48	.74	57						
Arts, Design, Entertainment, Sports, and Media	40	.83	35	-1.57	14						
Building and Grounds Cleaning and Maintenance	8	76	45	68	23						
Business and Financial Operations	45	.57	02	.40	.29						
Community and Social Service	14	.54	2.15	45	.70						
Computer and Mathematical	36	1.02	40	.74	63						
Construction and Extraction	57	-1.05	-1.02	26	11						
Educational Instruction and Library	62	.83	1.13	66	07						
Farming, Fishing, and Forestry	12	79	89	47	.06						
Food Preparation and Serving Related	16	87	.38	-1.27	24						
Healthcare Practitioners and Technical	89	.49	1.15	.82	.55						
Healthcare Support	19	75	1.39	.17	.05						
Installation, Maintenance, and Repair	49	44	71	.31	26						
Legal	7	.27	.21	1.07	.66						
Life, Physical, and Social Science	56	.88	.07	.52	64						
Management	45	1.04	.39	28	1.11						
Office and Administrative Support	51	-1.00	.16	.10	37						
Personal Care and Service	31	54	1.00	81	01						
Production	104	-1.07	-1.13	.07	78						
Protective Service	26	.02	04	.31	1.94						
Sales and Related	21	.42	06	-1.92	.75						
Transportation and Material Moving	50	83	30	.03	.59						

*Note*. Component scores are on a z-score metric. Component scores for the Interpersonally Oriented and Emotionally Resilient scores were multiplied by -1, so that higher scores reflect greater impact of Interpersonal Orientation and Emotional Resilience on job performance, respectively.



Table 6. Top 5 and Bottom 5 Occupations for Each Work Style Component

Proactive an	d Growth Oriented				
Top 5			Bottom 5		
11-1011.00	Chief Executives	2.08	53-7063.00	Machine Feeders and Offbearers	-1.86
27-2012.00	Producers and Directors	1.88	47-3014.00	HelpersPainters, Paperhangers, Plasterers, and Stucco Masons	-1.89
15-1221.00	Computer and Information Research Scientists	1.78	35-9021.00	Dishwashers	-1.91
15-1255.01	Video Game Designers	1.76	41-2012.00	Gambling Change Persons and Booth Cashiers	-1.93
17-2199.09	Nanosystems Engineers	1.74	51-3022.00	Meat, Poultry, and Fish Cutters and Trimmers	-1.94
Interpersona	ally Oriented				
Top 5			Bottom 5		
21-2011.00	Clergy	2.81	33-9099.02	Retail Loss Prevention Specialists	-1.53
21-1014.00	Mental Health Counselors	2.47	51-9195.03	Stone Cutters and Carvers, Manufacturing	-1.53
21-1021.00	Child, Family, and School Social Workers	2.38	33-9031.00	Gambling Surveillance Officers and Gambling Investigators	-1.54
21-1023.00	Mental Health and Substance Abuse Social Workers	2.38	47-5051.00	Rock Splitters, Quarry	-1.77
25-2051.00	Special Education Teachers, Preschool	2.34	45-4021.00	Fallers	-1.78
Consciention	us and Rule Oriented				
Top 5			Bottom 5		
51-8011.00	Nuclear Power Reactor Operators	2.15	27-2032.00	Choreographers	-3.43
19-4051.00	Nuclear Technicians	2.12	41-9041.00	Telemarketers	-3.59
19-4051.02	Nuclear Monitoring Technicians	2.03	41-9012.00	Models	-4.00
17-2161.00	Nuclear Engineers	1.90	41-9091.00	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	-4.19
29-1222.00	Physicians, Pathologists	1.89	27-2011.00	Actors	-4.51
Emotionally F	Resilient				
Top 5			Bottom 5		
53-2021.00	Air Traffic Controllers	3.17	15-2021.00	Mathematicians	-1.83
33-3012.00	Correctional Officers and Jailers	2.96	27-1024.00	Graphic Designers	-1.84
33-1011.00	First-Line Supervisors of Correctional Officers	2.94	27-1013.00	Fine Artists, Including Painters, Sculptors, and Illustrators	-2.35
33-3052.00	Transit and Railroad Police	2.90	27-1012.00	Craft Artists	-2.54
33-1021.00	First-Line Supervisors of Firefighting and Prevention Workers	2.82	27-3043.05	Poets, Lyricists and Creative Writers	-2.66

Note. Each block of occupations includes the following: O\*NET-SOC 2019 code, O\*NET-SOC title, and score on the given component. Component scores are on a z-score metric. Component scores for the Interpersonally Oriented and Emotionally Resilient scores were multiplied by -1, so that higher scores reflect greater impact of Interpersonal Orientation and Emotional Resilience on job performance, respectively.



#### **Conclusions and Summary**

Based on the observation and results above, the Center and project team agreed to use the PCA-based higher-order structure as the basis for updating the higher-order Work Styles dimensions in O\*NET. The rationale for this was threefold: First, given that O\*NET Work Style ratings are meant to be indicators of personality-related requirements of occupations, the team felt it was important that the higher-order structure reflects this intent as well. Second, the PCA-based higher-order dimensions provide a more accurate representation of the higher-order structure underlying the full set of active, data-level occupations, relative to the provisional structure identified in Putka et al. (2024). Lastly, the PCA-based higher-order dimensions exhibited substantively intuitive and meaningful differences across job zones and job families. The final structure, along with variable names and descriptions, will be published in the 30.1 release of the O\*NET database.



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#### **Appendix A: Work Style Intercorrelations**

Table A.1 presents intercorrelations among Work Styles that underlies the principal components analysis (PCA) described in the body of this report.

Table A.1. Work Style Rating Intercorrelations

Wo	ork Style	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	Achievement Orientation	1.00																				
2	Adaptability	.73	1.00																			
3	Attention To Detail	.31	.07	1.00																		
4	Cautiousness	.05	06	.68	1.00																	
5	Cooperation	.32	.62	11	12	1.00																
6	Dependability	.29	.36	.43	.61	.42	1.00															
7	Empathy	.28	.53	16	20	.87	.30	1.00														
8	Humility	.13	.35	.06	.11	.75	.40	.72	1.00													
9	Initiative	.81	.87	.03	15	.59	.30	.54	.34	1.00												
10	Innovation	.78	.71	.12	21	.30	04	.28	.17	.77	1.00											
11	Integrity	.54	.55	.39	.41	.50	.72	.45	.46	.56	.25	1.00										
12	Intellectual Curiosity	.86	.67	.41	.11	.31	.23	.26	.26	.72	.83	.52	1.00									
13	Leadership Orientation	.71	.73	02	04	.55	.41	.48	.30	.82	.55	.56	.54	1.00								
14	Optimism	.21	.52	41	42	.82	.17	.88	.57	.53	.27	.28	.11	.47	1.00							
15	Perseverance	.77	.74	.18	.15	.39	.47	.36	.17	.74	.54	.60	.61	.66	.33	1.00						
16	Self-Confidence	.79	.80	.06	03	.52	.38	.49	.20	.82	.60	.60	.62	.83	.49	.79	1.00					
17	Self-Control	.37	.59	.05	.18	.70	.66	.69	.49	.51	.09	.72	.24	.60	.61	.60	.67	1.00				
18	Sincerity	.35	.55	02	04	.86	.43	.93	.79	.57	.30	.60	.36	.51	.79	.43	.52	.73	1.00			
19	Social Orientation	.41	.62	24	37	.84	.21	.87	.56	.69	.41	.45	.32	.63	.88	.41	.65	.64	.81	1.00		
20	Stress Tolerance	.40	.61	.10	.28	.56	.69	.51	.33	.49	.10	.65	.26	.57	.44	.67	.66	.89	.55	.46	1.00	
21	Tolerance For Ambiguity	.80	.87	.09	12	.53	.23	.51	.34	.89	.81	.56	.80	.71	.46	.72	.79	.47	.54	.61	.46	1.00

*Note.* N = 891 (unit of analysis is occupation). Correlations that are bolded are statically significant (p < .05, two-tailed).