Putting the O*NET to Good Use:

A Critical Evaluation of the Use and Misuse of O*NET

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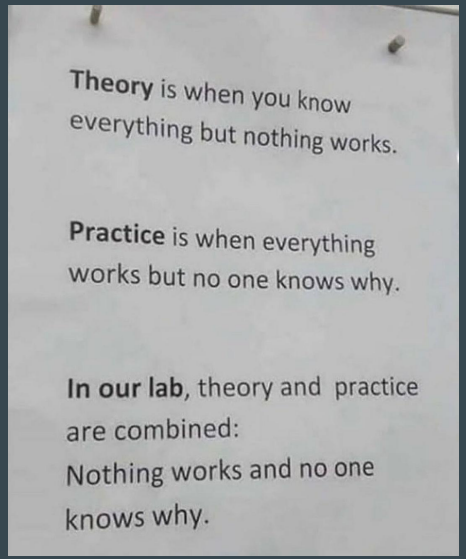
April 29, 2022 | 4:00 PM - 4:50 PM | Room 613/614

Steven Zhou, Jenna McChesney, and Kevin Hoff

Brief Introduction

- O*NET has served as a standardized, comprehensive source of information on US occupations for over 20 years
- However, has it been effectively marketed to and used by practitioners?



- Many concerns in applied talent management could be addressed through effective use of the O*NET (e.g., identifying KSAs for hiring, writing job descriptions, using the right selection criteria)
- Our symposium provides three examples of how researchers can utilize O*NET data to evaluate its use in applied settings, with the goal of identifying ways that we can improve and advance the application of O*NET tools

Symposium Sessions

1. Hoff, K., Liu, Z., Chu, C., Heimpel, N., Rounds, J., & Oswald, F. (2022). Building better career assessments with the O*NET: Integrating fit using interests, values, skills, knowledge, and personality.
2. Zhou, S., McEachern, P. J., Aitken, J. A., & Lee, P. (2022). Are we attracting the right candidates? A text analysis approach to understanding the applicability of O*NET in job advertising.
3. McChesney, J. E., Glosenberg, A., & Behrend, T. S. (2022). Using O*NET to better understand gender disparities in STEM: Career interests profiles of engineers and nurses.

Critical Evaluation of the Use and Misuse of O*NET
Session #2

Are we attracting the right candidates?

A text analysis approach to understanding the applicability of O*NET in job advertising.

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Steven Zhou, Peter J. McEachern, John Aitken, and Philseok Lee

Background: Accuracy in the Attraction Process

- Attraction-selection-attrition (ASA) model (Schneider, 1987): Organizational homogeneity achieved via
  - Attracting people with similar personalities, values, and interests.
  - Selecting people who are most similar to job incumbents.
  - Attrition of people who do not fit in well.
- Job ads help with the attraction portion (Ehrhart, 2006; Highhouse et al., 1998, 1999; Stevens & Szmerekovsky, 2010; Uggerslev et al., 2012).
- O*NET can and should be used to make good job ads that follow I/O-established best practices (Gatewood et al., 2016; Jeanneret & Strong, 2003).
- Poor quality of many existing job ads suggests the O*NET is likely not used for this purpose (Hickok, 2021; Kelly, 2018).
  - External pressures to make job ads more attractive can sacrifice accuracy (Alvesson, 2013; Clark, 2017; SmartRecruiters, n.d.).
- **We assessed similarity of language used in job ads (specifically tasks outlined) to O*NET task descriptions.**

Background: RIASEC Interests and Job Ad Accuracy

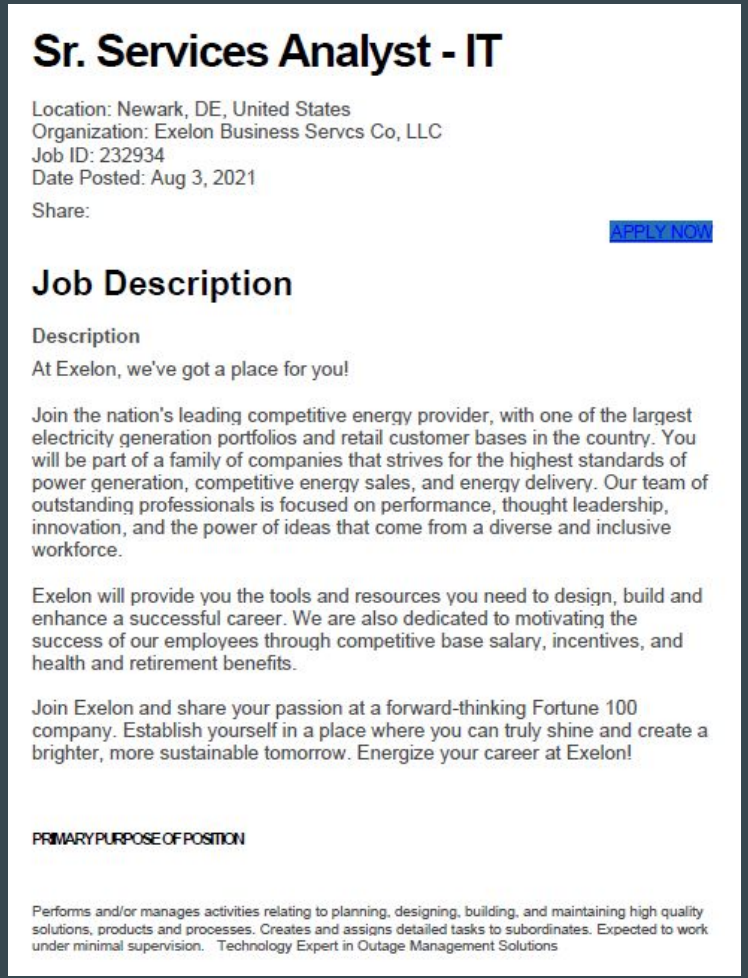
- Six different clusters of vocational interests: Realistic, Investigative, Artistic, Social, Enterprising, Conventional (Holland, 1997).
- Given ASA theory, interests expressed in a job ad should line up with those that the job is suited for.
- Subgroup vocational interest differences can contribute to adverse impact (Jones et al., 2021).
- **We assessed RIASEC-related vocabulary used in job ads in relation to O*NET-made RIASEC interest profiles.**

Background: Gendered Language in Job Ads

- Gendered language in job ads likely contributes to gender imbalances in occupations and even typical men's and women's job interests (Gaucher et al., 2011; Pietraszkiewicz et al., 2019).
- Mean-level gender differences in RIASEC interests might be a mechanism of such imbalances (Jones et al., 2021; Rong et al., 2009).
- Monitoring gendered language in job ads might help to correct these imbalances.
- **We assessed the relationship between gendered language in job ads and gender imbalances in those occupations.**

Methods

- Downloaded 990 public real-world job ads, selected from searching four “bright outlook” job titles in each of eight different industries (e.g., computer science, HR, education)
- Compared the job ad “responsibilities” text to the actual job tasks identified in the respective O*NET job analyses
- Scored job ads using a RIASEC interest dictionary and compared to RIASEC interest ratings from O*NET
- Scored job ads using a gender dictionary and compared to incumbent gender proportions from the BLS



Sr. Services Analyst - IT

Location: Newark, DE, United States
Organization: Exelon Business Servcs Co, LLC
Job ID: 232934
Date Posted: Aug 3, 2021

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Job Description

Description

At Exelon, we've got a place for you!

Join the nation's leading competitive energy provider, with one of the largest electricity generation portfolios and retail customer bases in the country. You will be part of a family of companies that strives for the highest standards of power generation, competitive energy sales, and energy delivery. Our team of outstanding professionals is focused on performance, thought leadership, innovation, and the power of ideas that come from a diverse and inclusive workforce.

Exelon will provide you the tools and resources you need to design, build and enhance a successful career. We are also dedicated to motivating the success of our employees through competitive base salary, incentives, and health and retirement benefits.

Join Exelon and share your passion at a forward-thinking Fortune 100 company. Establish yourself in a place where you can truly shine and create a brighter, more sustainable tomorrow. Energize your career at Exelon!

PRIMARY PURPOSE OF POSITION

Performs and/or manages activities relating to planning, designing, building, and maintaining high quality solutions, products and processes. Creates and assigns detailed tasks to subordinates. Expected to work under minimal supervision. Technology Expert in Outage Management Solutions

Assessing Task Accuracy (RQ1)

Relaxed Word Mover's Distance (rWMD): "a novel distance function between text documents... based on recent results in word embeddings", "measures the similarity between two text documents"

	A	B	C	D
1	**Job Title**	**# of Job Ads**	**Average RWMD**	**SD of RWMD**
2	Accountants	28	0.692	0.062
3	Medical and Clinical Laboratory Technologists	19	0.641	0.128
4	Nursing Assistants	19	0.61	0.259
5	Educational, Guidance, School, and Vocational Counselors	48	0.599	0.053
30	Medical Scientists, Except Epidemiologists	20	0.465	0.069
31	Computer User Support Specialists	50	0.446	0.041
32	Software Developers	50	0.443	0.046
33	Mechanical Door Repairers	25	0.416	0.051

Assessing Interest Vocabulary (RQ2)

rWMD calculated between job ads and interest-specific task statements (e.g., “Record and track employee data” for Conventional), then compared to the O*NET interest ratings (ranged from 0 to 100)

	A	B	C	D	E	F	G
1	**Job Title**	**Realistic**	**Investigative**	**Artistic**	**Social**	**Enterprising**	**Conventional**
2	Home Health Aides	0.519	0.592	0.513	0.627	0.558	0.596
3	Medical and Clinical Laboratory Technologists	0.556	0.595	0.478	0.562	0.522	0.608
4	Computer Systems Analysts	0.523	0.571	0.485	0.542	0.569	0.59
5	Business Intelligence Analysts	0.508	0.57	0.487	0.539	0.562	0.598
30	Loan Interviewers and Clerks	0.473	0.537	0.468	0.522	0.529	0.581
31	Family Medicine Physicians	0.484	0.544	0.473	0.554	0.511	0.542
32	Education Administrators, Postsecondary	0.455	0.518	0.468	0.535	0.517	0.524
33	Education Teachers, Postsecondary	0.449	0.506	0.475	0.545	0.51	0.517

Compared to O*NET interest ratings, the use of interest-specific language in job ads were notably different.

Assessing Gender Bias (RQ3)

Cosine similarity between job ads and list of masculine/feminine words, used to predict job-level proportion of women employed in a cluster-corrected regression (i.e., 990 job ads “nested” in 32 job titles)

	A	B	C
1	**Job Title**	**Agentic (Masculine)**	**Communal (Feminine)**
2	Home Health Aides	0.017	0.045
3	Registered Nurses	0.017	0.04
4	Nurse Practitioners	0.022	0.037
5	Family Medicine Physicians	0.012	0.036
30	Medical Scientists, Except Epidemiologists	0.006	0.008
31	Medical and Clinical Laboratory Technologists	0.01	0.008
32	Operating Engineers and Other Construction Equipment Operators	0.011	0.008
33	Maintenance and Repair Workers, General	0.011	0.008

Next Steps (Study 2, in progress)

Follow-up experimental design recruiting college students to read and rate randomly assigned job advertisements

- H1a. Job advertisements that are *more accurate* will be rated by candidates as *more credible*, which will in turn increase the likelihood of the candidates to follow up.
- H1b. Job advertisements that are *less accurate* will be rated by candidates as *more attractive*, and which will in turn increase the likelihood of the candidates to follow up.
- H2. Job advertisements that primarily use a particular dimension of RIASEC vocabulary will be rated as more attractive by candidates that score highest in the corresponding RIASEC dimension.
- H3. Job advertisements that use more masculine (feminine) vocabulary would be rated as more attractive by men (women).

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Session #2

Thanks for coming!

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Questions? Contact Steven at szhou9@gmu.edu or Twitter @szzhou4