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The German O*NET Interest Profiler Short Form

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Abstract: Holland's RIASEC model is the dominant framework to conceptualize vocational interests. It describes vocational interests with six broad domains: realistic, investigative, artistic, social, enterprising, and conventional. The O*NET Interest Profiler Short Form is a freely accessible inventory measuring vocational interests according to Holland's model with 60 items. With this manuscript, we provide a translation of the inventory into German and evaluate the scores' psychometric qualities, construct-related and criterion-related validity. We used data from an age-diverse ($N = 276$) and high-school sample ($N = 672$). Internal consistency estimates of the scale scores were adequate. Randomization tests and multidimensional scaling showed that the scores' structural properties mirrored the RIASEC theoretical model. Scale scores were sensitive to gender differences and could predict participants' actual and ideal occupations with reasonable hit rates. Overall, the German O*NET Interest Profiler Short Form seems apt for usage in career counseling and research settings.

Keywords: vocational interests, RIASEC, O*NET Interest Profiler, interest inventory



Vocational interests are defined as relatively stable preferences for activities, contexts, and outcomes that motivate behaviors (Rounds & Su, 2014). Vocational interests can direct, energize, and sustain behavior which makes them a relevant predictor for outcomes like job or study choice, engagement, and performance (e.g., Nye et al., 2012). Vocational interests even predict outcomes in nonwork life domains (Stoll et al., 2017), underlining their importance to describe human individuality.

An influential taxonomy of vocational interests is John Holland's theory of vocational personalities (1959, 1997). A key idea of Holland's theory is that persons can be described on six domains: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional interests, together referred to as RIASEC. Briefly, realistic refers to interest in working physically, with things or tools. Investigative captures interest in science, research, or thinking through problems. Artistic reflects appreciation for activities that allow creative expression. Social refers to interest in helping, serving, or teaching. Enterprising reflects interest in selling, managing, and leading. Conventional refers to interest in dealing with ordered, typically data-related activities. Along with describing persons' interests, the six domains can also describe (work) environments. By

consequence, counselors and researchers can evaluate whether an individuals' interest matches their work environment.

The RIASEC interest domains are posited to reflect a hexagonal structure that represents the psychological similarity of the six domains (Holland, 1997; Prediger, 1982; Rounds & Tracey, 1993). Adjacent interest domains (e.g., realistic and investigative) are more closely related than alternate domains (e.g., realistic and artistic), which, in turn, are more closely related than opposite domains (e.g., realistic and social). The hexagonal structure implies that a person's score on one domain can entail information about remaining domains (Darcy & Tracey, 2007; Nagy et al., 2010; Rounds & Tracey, 1996). A wide range of studies has tested and generally corroborated or refined the hexagonal structure of vocational interests (Day & Rounds, 1998; Long & Tracey, 2006).

Vocational interests are integrated in a nomological network with other individual differences (Armstrong et al., 2008). Specific links with Big Five personality traits (Mount et al., 2005) have long been established. For example, persons with high levels of artistic interests typically score higher on the Big Five trait openness ($\rho = .41$, Mount et al., 2005) or persons high on enterprising interests score higher on extraversion ($\rho = .40$). Also, vocational interests are related to cognitive abilities (Ackerman & Heggestad, 1997), self-efficacy beliefs (Rottinghaus et al., 2003), values and goals (Stoll et al.,

2020). These relations might have led to Holland's assumption that RIASEC interests reflect broad personality types (1997). It is important to note, however, that although vocational interests and personality traits might share similar psychological processes (Hoff, Song, Einarsdóttir, et al., 2020; Mount et al., 2005), the two phenomena describe distinct aspects of human individuality (see also Roemer et al., 2023).

Vocational interests were moreover meta-analytically shown to exhibit relatively large gender differences (Su et al., 2009). While men tend to report higher realistic ($d = 0.84$) and investigative ($d = 0.26$) interests, women tend to report higher social ($d = -0.68$), artistic ($d = -0.35$), and conventional ($d = -0.33$) interests.

Measuring Vocational Interests With the O*NET Interest Profiler

To date, several inventories to assess vocational interests exist (e.g., Bergmann & Eder, 2005; Campbell et al., 1992; Donnay et al., 2005; Holland et al., 1994; see Hansen, 2019; Chernyshenko et al., 2019 for overviews), many of which are copyright-restricted. The O*NET Interest Profiler (O*NET IP; Lewis & Rivkin, 1999) was developed to provide publicly available scales for assessing vocational interests as conceptualized in Holland's model. Use and integration of the Interest Profiler is offered free of charge via the O*NET Career Exploration Tools Content License (https://www.onetcenter.org/license_tools.html). Within the United States, the Interest Profiler is widely disseminated, with annual usage in the millions, primarily via its web-based versions (e.g., <https://www.mynextmove.org/explore/ip>, <https://www.miproximopaso.org/>, and <https://services.onetcenter.org/ip>; for details on the usage, see <https://www.onetcenter.org/reports/omb2021.html> [e.g., Supporting Statement Part A]). The O*NET RIASEC scales have different lengths. The (now retired) 180-item O*NET IP Long Form (Rounds et al., 1999) built upon a broad list of work activities and occupations, which was iteratively screened, reduced, re-extended, reviewed, and psychometrically evaluated (Lewis & Rivkin, 1999). The O*NET Interest Profiler Long Form formed the basis for the 60-item O*NET IP Short Form (Rounds et al., 2010). In selecting the items for the Short Form, items' content coverage and adherence to the hexagonal structure, and psychometric properties of the resulting scale scores were considered (Rounds et al., 2010).

The primary use of the O*NET IP is career exploration and planning. The instrument can be also used for research purposes (Rounds et al., 2021). Career exploration is most pressing in younger adults but continues to be

relevant across adulthood. The target population of the O*NET IP therefore consists of the adult workforce with a focus on young adults and of populations commonly sampled in psychological research settings.

The Current Study: Measuring Vocational Interests with the O*NET IP in Germany

The aim of the current study was to translate the O*NET IP Short Form into German and validate resulting scale scores. Since vocational activities might be differently valued and prevalent in the United States and in Germany, it needs to be studied whether the scores from the translated version adequately mirror the underlying theoretical model (Holland, 1997). To this aim, we assessed the psychometric properties, construct-related and criterion-related validity of the German O*NET IP scale scores in samples of two populations that are commonly targeted in vocational interest research and practice.

Methods

Translation Process and Adaptation

The O*NET IP Short Form was translated into German by a bilingual person and backtranslated by another bilingual person. Any discrepancies between the original and backtranslated versions were discussed and if necessary revised. In the original English web-based O*NET IP Short Form, participants indicate their liking and disliking of the 60 activities on a five-point rating scale (Rounds et al., 2010). Since 2017, the five response options are depicted by five emojis representing different intensities of likes and dislikes (Rounds et al., 2016). For the German version, we slightly diverged from this response format due to difficulties of appropriately translating *dislike* in this context. We asked participants to indicate their interest in the respective activities, using a five-point rating scale. Anchors were verbally labeled with 1 = *not at all interesting* (German: *interessiert mich überhaupt nicht*) and 5 = *very interesting* (*interessiert mich sehr*). No emojis were included (Phan et al., 2019). The Appendix shows the German O*NET IP Short Form along with the English translation.

Samples and Procedure

Age-Diverse Sample

Participants of the age-diverse sample were 276 adults who were recruited by psychology students from

Humboldt-Universität zu Berlin in Germany. As part of their coursework, students should distribute a questionnaire which included the German O*NET IP Short Form. The students distributed a link to an online questionnaire among their acquaintances, and participants rated themselves on vocational interests and other individual differences not relevant for the current study. All considered participants consented to the use of their data for research purposes. To ensure data quality, we excluded 11 participants who provided the same answer in min. 85% of the interest items. No additional data screening techniques were employed. Participants were on average 32 years ($SD = 14.1$); 59% were women. About 40% were employed, 33% were students, and 13% were students with a next job.

High-School Sample

Participants of the high-school sample were 672 students at 12 academic track schools in Germany (Gymnasium) who were in their final years of secondary education. Data were collected as part of a larger study project on a study aptitude test. Underage students were required to bring written parental consent to participate. In an online questionnaire, participants provided information on their vocational interests and Big Five personality traits. Afterward, further constructs not relevant for the current study were assessed. To ensure data quality, we excluded 13 participants who provided the same answer in min. 85% of the interest items. No additional data screening techniques were employed. Participants were on average 17.3 years ($SD = 1.2$); 57% were women. The majority (51%) was in 12th grade, 34% were in 11th grade, and 15% were in 13th grade.

Measures

Participants in both samples filled out a web-based German O*NET IP Short Form. Participants rated their interest in 60 vocational activities, with 10 items for each interest domain. Mirroring the implementation of the web-based English O*NET IP, items were ordered such that after every second item, another interest domain was measured (see Appendix). The six scale scores were computed as unit-weighted means over the 10 items.

To assess the discriminant validity of the German O*NET IP scale scores, we administered the Big Five Inventory 2 (Danner et al., 2019; Soto & John, 2017) in the high-school sample. Each of the five personality traits was answered with 12 items on a 5-point rating scale. McDonald's omega total estimates (Kelley, 2018) ranged between $\omega = .80$ (agreeableness) and $.87$ (conscientiousness).

To assess the criterion-related validity of the German O*NET IP scale scores, we asked participants in the age-diverse sample with open questions about their actual and ideal occupations. Their answers were translated to English and searched on the O*NET Occupation Quick Search (Morris, 2021) for the RIASEC Occupational Interest Profile codes (Rounds et al., 2008, 2013). For each occupation, we selected the first letter of the Occupational Interest Profiles code (high-point code), which reflects the RIASEC domain that best characterizes the participants' occupation.

Results

Descriptive Statistics and Reliability

The M s, SD s, and internal consistency estimates of the scale scores in the two samples are shown in the left part of Table 1. Across both samples, realistic and conventional scores had lowest M s and SD s, which has similarly been reported for other (well-educated) samples in Germany (e.g., Nagy et al., 2010; Stoll et al., 2017). Internal consistency was estimated as McDonald's omega total (using the R package MBESS; Kelley, 2018). In all cases, internal consistency estimates were $\omega \geq .80$ and as such within the range of reliability estimates reported for the original O*NET IP Short Form in prior studies (ranging from .60 to .98; Rounds et al., 2021; p. 66f).

Construct-Related Validity

Structural Validity

The right part of Table 1 shows the correlations among the scale scores in the two samples. Correlations were mostly positive, ranging between $-.09 \leq r \leq .58$. In both samples, the highest correlation occurred for realistic and conventional interests ($r \geq .54$), which indicates a stronger relation than reported in meta-analysis ($\rho = .27$; Mount et al., 2005) or in prior results based on the O*NET IP (e.g., $r = .22$ in the validation sample; Rounds et al., 2021). In general, correlations between adjacent interest domains tended to be larger (e.g., $r = .34$ between realistic and investigative in the high-school sample) than between alternate (e.g., $r = .11$, realistic and artistic) and opposite domains (e.g., $r = .06$, realistic and social). This is consistent with the assumed hexagonal structure among the interest domains (Holland, 1997).

To test whether the correlations between interest domains reflected the order implied by the hexagonal structure, we used randomization tests (Hubert & Arabie, 1987; Rounds et al., 1992; Tracey, 1997; but see also Nagy

Table 1. *M*, *SD*s, internal consistency estimates, and scale score correlations

Interest domain	Age-diverse sample			High-school sample			R	I	A	S	E	C
	<i>M</i>	<i>SD</i>	ω	<i>M</i>	<i>SD</i>	ω						
Realistic	1.89	0.77	.86	1.85	0.74	.87		.34**	.11**	.06	.16**	.54**
Investigative	2.53	0.93	.87	2.72	0.96	.89	.37**		.20**	.24**	.07	.20**
Artistic	2.71	0.98	.88	2.48	0.94	.88	.06	.22**		.34**	.17**	-.01
Social	2.92	0.80	.80	2.75	0.78	.80	.12*	.33**	.33**		.17**	.04
Enterprising	2.17	0.80	.84	2.64	0.81	.83	.32**	.17**	-.01	.13**		.42**
Conventional	1.89	0.79	.88	1.91	0.71	.86	.58**	.24**	-.09	.01	.49**	

Note. $N_{\text{Age diverse}} = 265$; $N_{\text{High school}} = 659$. Items were answered on a 1–5 scale. * $p < .05$. ** $p < .001$. Correlations below the diagonal are from the age-diverse sample; correlations above the diagonal are from the high-school sample.

et al., 2010). Randomization tests evaluate predictions about the order of the correlations and yield significance levels of the number of predictions met versus the null assumption of a random order (Tracey, 1997). The result is a correspondence index (CI), ranging between -1 and 1 . Higher values indicate better fit to the hypothesized order. CIs were .64 ($p = .03$) and .86 ($p = .02$) for the age-diverse and high-school sample. These values are comparable to the estimate of .69 reported in the original validation study (Rounds et al., 2010) and to the meta-analytic estimate of .63 ($SD = .18$; Tracey & Rounds, 1993). This suggests that scores from the German O*NET IP adhered similarly well to the order implied by the hexagonal structure as the original version.

To visualize the relations between the RIASEC domains in a two-dimensional space, we applied multidimensional scaling (MDS, Torgerson, 1952). We first converted the correlation matrix into a distance matrix and then applied ordinal MDS (using smacof; Mair et al., 2022). Stress values were .01 and .05 for the age-diverse and high-school

sample, indicating only small discrepancies between the distances in the original data and distances in the two-dimensional solution. As shown in Figure 1, the six interest domains were circularly ordered as theoretically expected. In the age-diverse sample, the position of artistic interest somewhat staked out, suggesting that artistic interest was slightly more distant from the other interests than expected. In the high-school sample, a likewise observation occurred for enterprising interest. Similar anomalies are commonly found in structural analyses of RIASEC scales (e.g., Rounds et al., 2021) and, in fact, reflect Holland's notion that relations among RIASEC domains form a *misshapen polygon* (Holland & Gottfredson, 1992, p. 165), rather than an equilateral hexagon. Overall, the results suggest that the scale scores of the German O*NET IP Short Form reflected the theoretical basis of Holland's (1997) model.

In addition, we explored the structure separately for women and men (see OSF for detailed results). Generally, adherence to the assumed structure slightly deteriorated in the gender-specific analyses. In the age-

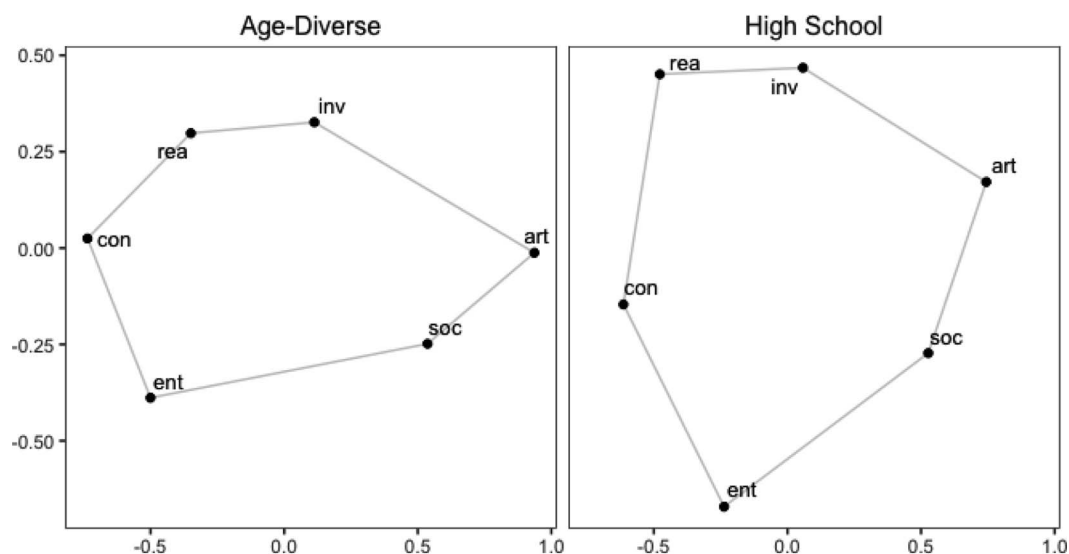
**Figure 1.** Nonmetric multidimensional scaling solutions for the RIASEC Scales in the two samples.

Table 2. Correlations between vocational interest scores and Big Five personality trait scores

Personality traits	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Extraversion	-.10*	.01	.08*	.20***	.33***	-.03
Agreeable	-.13**	.02	.07	.32***	-.11**	-.14**
Conscientious	-.04	.03	-.11**	.15***	.13***	.10*
Neuroticism	-.15***	-.04	.10**	-.04	-.16***	-.15***
Openness	-.05	.13***	.55***	.18***	.04	-.10*

Note. $N = 658$; high-school sample. Correlations of $r \geq |.08|$ are significant with $p < .05$.

diverse sample, CIs for both women and men remained at .64 ($p = .03$). MDS suggested that for men, the theoretical order of interest domains clearly emerged (Stress = .003), whereas for women, the order of social and artistic interests changed in the two-dimensional space (Stress = .04). In the high-school sample, CIs reduced to .80 ($p = .02$) and .72 ($p = .03$) for women and men, respectively. Here, for women, MDS showed adherence to the theoretical order (Stress = .08), whereas for men, the position of artistic interest staked out as being less related with the other interests than theoretically expected (Stress = .01). Previous studies on the interest structure generally indicated trivial to small gender differences (Beinicke et al., 2014; Nagy et al., 2010; Pässler et al., 2014). Similar to these findings, our results suggest that gender-specific interpretations somewhat deviated from the theoretical structure, in our case most strongly for artistic and social interests (see also below).

Discriminant Validity

To explore the discriminant validity (e.g., Wehner et al., 2018) of the German O*NET IP scale scores, we analyzed the correlations with the Big Five personality scale scores in the high-school sample (see Table 2). As expected from previous meta-analytic findings (Mount et al., 2005), we observed moderate to high correlations between artistic interests and openness ($r = .55$), enterprising interests and extraversion ($r = .33$), and social interests and extraversion ($r = .20$). A relatively high correlation between social interests and agreeableness ($r = .32$) was similarly reported for the original O*NET IP ($r = .38$; Rounds et al., 2021). Somewhat deviating from the previous results, social interests also correlated moderately with conscientiousness ($r = .15$), which was

not the case in the original version ($r = -.04$; Rounds et al., 2021) or in the meta-analysis ($p = .07$, Mount et al., 2005). Apart from this exception that may reflect cultural differences, the strongest relations between vocational interests and personality traits converged with previous findings on the nomological net of vocational interests.

Gender Differences

We next examined whether the German O*NET IP is sensitive to gender differences. As shown in Table 3, the results converged across the two samples and were largely consistent with meta-analytic findings (Su et al., 2009). That is, largest gender differences occurred for realistic and social interest scores. Also consistent with meta-analysis, women had higher artistic interest scores. The greatest discrepancy from meta-analysis was for conventional interests, where results in our samples indicated higher scores for men, particularly in the high-school sample. This might be due to the relatively high correlation between conventional and realistic interest ($r > .50$), which, in turn, could be driven by a relatively high number of conventional interest items focusing on software/computer-related activities. Such activities might evoke gender stereotypes, which, particularly in the high-school sample, could have contributed to the empirical gender difference. Overall, the results indicate sensitivity of the German O*NET IP to gender differences and encourage a nuanced examination of gender differences across cultural contexts.

Criterion-Related Validity

To assess whether the German O*NET IP predicts career choice in the German employment landscape, we examined the hit rates of the inventory for occupational

Table 3. Gender difference effect sizes (Cohen's d)

Sample	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Age-diverse	0.70	0.09	-0.38	-0.36	0.35	0.22
High school	0.80	0.08	-0.30	-0.60	0.23	0.51
Meta-analytic findings reported in Su et al. (2009)	0.84	0.26	-0.35	-0.68	0.04	-0.33

Note. Age-diverse sample: $n_{\text{women}} = 156$, $n_{\text{men}} = 103$. High-school sample: $n_{\text{women}} = 378$, $n_{\text{men}} = 271$. Positive values indicate higher scores for men.

membership (see Hanna & Rounds, 2020) in the age-diverse sample. Broadly, hit rates are the percentages of correctly predicted occupations. We recorded a hit when an individual's highest RIASEC interest score matched the first letter of their occupation's RIASEC code. We computed the hit rates per interest domain, separated for actual and ideal occupations. Note that a hit rate depends on the frequency of a given RIASEC occupation code in the population: If occupations with a given RIASEC code are relatively common (i.e., high base rate), then the hit rate of correctly predicting this RIASEC occupation code is increased by chance alone. To correct for this dependency, we divided the hit rate by the base rate of the given RIASEC occupation code. The resulting accuracy ratio describes how much more often people are classified into a given occupational field if they have the corresponding interest, compared to the base rate of people generally classified into this occupational field. To our knowledge, no base rate exists for actual or ideal occupations in Germany at population level, which is why we used (1) sample-based base rates and (2) base rates reported for the actual occupations in the Swiss labor market (Ghetta et al., 2018).

The results are shown in Table 4. The first column denotes the proportion of people with a high-point interest in the given domain, the second shows the base rate of occupations in that domain in our sample, and the third is the base rate reported for the Swiss labor market (Ghetta et al., 2018). Hit rates are shown in the fourth column. Across domains, overall hit rates were 35.3% for actual jobs and 44.6% for

ideal jobs. These rates are similar to the overall hit rate of 41% reported for career aspirations using the original O*NET IP (Rounds et al., 2021; p. 105). Given the huge number of career options, these hit rates imply substantial predictive accuracy. Separated per domain, hit rates ranged between 17% and 69%, largely falling into the meta-analytic provided hit rate confidence interval (Hanna & Rounds, 2020). An exception were the low hit rates for conventional interest (0% and 14%, for actual and ideal occupations, respectively), which could be because few people had high conventional interest scores ($\leq 6\%$), and the base rates for conventional occupations were also relatively low (15% and 3%).

Correcting for the sample base rate, the accuracy ratio was in all but one case > 1 , meaning that participants' occupations were more accurately predicted based on participants' interest scores than based on the base rate alone. For example, participants with high realistic interests were $3.0 \times$ more likely to have a realistic occupation, compared to what would have been expected by the empirical base rate in our sample. Correcting for the Swiss labor market base rate yielded a somewhat different pattern, which is most likely explained with our sample over-representing higher-educated individuals, preferring nonrepresentative jobs. In most cases, these additional accuracy ratios increased compared with the ratios corrected for the sample base rate. Only for realistic interests the ratio decreased, which may be due to fewer than average individuals holding realistic jobs in our sample. While the differences between the two baseline corrections showcase restrictions of our sample's representativeness, they converge on the notion that the German

Table 4. High point interest rates, base rates of occupation, hit rates, and accuracy ratio

Interest domain	High point interest rate	Sample base rate occupation ^a	Swiss base rate occupation ^b	Hit rate	Accuracy ratio: hit rate/emp. base rate ^a	Accuracy ratio: hit rate/Swiss base rate ^b
Predicting actual occupation						
Realistic	6.00%	9.50%	30.20%	28.60%	3.0	0.9
Investigative	19.80%	19.00%	8.80%	43.50%	2.3	4.9
Artistic	25.00%	5.20%	2.60%	17.20%	3.3	6.6
Social	31.90%	26.70%	15.90%	40.50%	1.5	2.5
Enterprising	11.02%	25.00%	24.90%	69.20%	2.8	2.8
Conventional	6.00%	14.70%	17.70%	0.00%	0.0	0.0
Predicting ideal occupation						
Realistic	3.40%	8.00%		33.30%	4.2	
Investigative	20.60%	27.40%		55.90%	2.0	
Artistic	29.70%	20.60%		42.30%	2.1	
Social	32.00%	21.10%		37.50%	1.8	
Enterprising	10.30%	20.00%		66.70%	3.3	
Conventional	4.00%	2.90%		14.30%	5.0	

Note. Data are from the age-diverse sample; n with a coded actual occupation = 116; n with a coded ideal occupation = 175. ^a Sample Base Rate Occupation, derived from the present data. ^b Swiss Base Rate Occupation, reported in Ghetta et al., (2018). Note that these estimates for Switzerland are close to the US occupation base rate, estimated from more than 150 million employees (DeCeanne et al., 2017; as cited in Hanna & Rounds, 2020).

O*NET IP proves useful to predict individuals' career choice, and it does so similarly well as many other interest inventories (Hanna & Rounds, 2020).

Discussion

The O*NET IP Short Form is a publicly available 60-item vocational interest inventory to assess the six interest domains of Holland's (1997) RIASEC model. With this manuscript, we provided a German translation of this inventory and evaluated its psychometric properties in two samples from populations commonly targeted in vocational interest research and practice.

The results revealed satisfactory psychometric properties of the German O*NET IP scale scores. In terms of structural validity, the correlations among the six interest scores well mirrored the theoretically posited hexagonal structure (Holland, 1997). Also, correlations between the interest scores and personality trait scores converged with previous findings (Mount et al., 2005; Rounds et al., 2021), suggesting that the scores of the German O*NET IP were adequately located in the nomological network of vocational interests. Moreover, the German O*NET IP predicted participants' career choice and aspirations. Given the vast amount of career opportunities and influences on career choice, the obtained overall hit rates of 35%–45% conveyed substantial predictive accuracy. In sum, the results suggest that the German O*NET IP can be used in research and career exploration settings to validly assess the RIASEC vocational interests as defined in Holland's model.

The findings imply additional recommendations for usage of the German O*NET IP. First, our data showed the predictive accuracy of the German O*NET IP scores in the age-diverse sample. This suggests that vocational interests do not lose their relevance upon job entry. Instead, assessing vocational interests throughout the career might help to identify motivational tendencies or career orientations that continue to be important at different career stages (Hanna & Rounds, 2020; Hoff, Song, Wee, et al., 2020). The German O*NET IP might lend itself to this purpose.

Second, although the German O*NET IP proved useful to predict participants' actual and ideal occupations, prediction was not perfect. For usage in career guidance or counseling, vocational interests should therefore be explored in tandem with other individual differences, such as personality, skills, or values.

Third, while the hexagonal structure was generally supported, the position of artistic interests slightly diverged from the other domains in the age-diverse sample. Similarly, in the gender-specific analyses, adherence to the assumed structure somewhat deteriorated, deterioration was mainly

associated with artistic and social interests, and for women in the age-diverse sample, the order of artistic and social interests even reverted. Potentially, this might be because artistic and social interests covered activities frequently pursued as leisure activities (e.g., play a musical instrument, teach children how to play sports). Identifying as a man or a woman or being part of the workforce could contribute to evaluating these activities from a different perspective. It is also possible that sample characteristics had an impact here, and future structural analyses should explore these possibilities in greater depth (e.g., Nagy et al., 2019). Overall, this finding underlines the importance of instructing participants to rate the activities in terms of *occupational* activities.

Limitations and Directions for Further Research and Application

While this study provided evidence for the theory-consistent interpretation of the German O*NET IP scores, several limitations and directions for further research should be considered. First, and most generally, our results should be interpreted considering sample restrictions. For example, over-representation of individuals with higher educational background in both samples might contribute to the relatively low scores on realistic and conventional interests (see also Nagy et al., 2010). Such restriction of range could propagate to estimated gender differences or correlations, potentially contributing to discrepancies from earlier findings. Thus, our results should not be taken as representative for the German population. Instead, they validate usage of the German O*NET IP in two subpopulations commonly targeted in vocational interest research and practice, but for further populations, validation is still pending.

Second, we did not formally examine the measurement invariance with the original version, such that direct comparisons between the scores of the German O*NET IP and of the original English version are not yet warranted. To enable cross-cultural comparisons – for example in terms of the interest profiles – future research should explore the measurement invariance of the translated version (Bader et al., 2021).

Third, we examined the psychometric qualities of the German O*NET IP scores with cross-sectional data. Therefore, we could not explore the test-retest reliability or predictive validity of the test scores. Based on prior studies (e.g., Hanna & Rounds, 2020; Low et al., 2005; Rounds et al., 2021), we assume the German O*NET IP scores to remain relatively consistent and predictive over time. Follow-up longitudinal studies should set out to test this assumption.

Fourth, the O*NET IP conceptualizes vocational interests at a relatively high level of aggregation. More specific, so-called basic interests were shown to yield more precise

predictions than RIASEC domain scores (Hanna & Rounds, 2020; Ones & Viswesvaran, 1996; Ralston et al., 2004). However, the O*NET IP does not explicate basic interests and resulting scores cover a variety of basic interests. To unfold the basic interests contained in the O*NET IP scores, nuanced comparisons with basic interest taxonomies (e.g., Su et al., 2019) have proven useful (Chu et al., 2022; Rounds et al., 2022).

Fifth, we could not explore the convergent validity of the scores of the German O*NET IP. Although our analyses suggest that the scores validly assess vocational interest as conceptualized in Holland's model, future research should examine the convergence and divergence with other vocational interest measures in Germany (see also Chu et al., 2022). This seems particularly relevant for conventional interests, where the atypical gender differences in our data suggest that the conventional items might be somewhat differentially interpreted.

Finally, to leverage its usage in career exploration and orientation, the German O*NET IP should be more widely disseminated (e.g., with permanent, publicly available websites, similar to the English web-based O*NET IP) and closely integrated with information about the German workforce system. Providing easily accessible information on how individuals' interest profiles match potential careers could greatly increase the applied potential of this publicly available, free-of-charge inventory.

Conclusion

Overall, the German O*NET IP performed well to assess the six interest domains as proposed in Holland's (1997) theory in two samples of populations that are commonly targeted in vocational interests research and practice. The German O*NET IP is free to use, and we look forward to studies using this measure, yielding insights into the nature and power of vocational interests or providing valuable information for career exploration and guidance.

References

- Ackerman, P. L., & Heggestad, E. D. (1997). Intelligence, personality, and interests: Evidence for overlapping traits. *Psychological Bulletin*, 121(2), 219–245. <https://doi.org/10.1037/0033-2909.121.2.219>
- Armstrong, P. I., Day, S. X., McVay, J. P., & Rounds, J. (2008). Holland's RIASEC model as an integrative framework for individual differences. *Journal of Counseling Psychology*, 55(1), 1–18. <https://doi.org/10.1037/0022-0167.55.1.1>
- Bader, M., Jobst, L. J., Zettler, I., Hilbig, B. E., & Moshagen, M. (2021). Disentangling the effects of culture and language on measurement noninvariance in cross-cultural research: The culture, comprehension, and translation bias (CCT) procedure. *Psychological Assessment*, 33(5), 375–384. <https://doi.org/10.1037/pas0000989>
- Beinicke, A., Pässler, K., & Hell, B. (2014). Does gender-specific differential item functioning affect the structure in vocational interest inventories? *International Journal for Educational and Vocational Guidance*, 14(2), 181–198. <https://doi.org/10.1007/s10775-013-9254-y>
- Bergmann, C., & Eder, F. (2005). *Allgemeiner Interessen-Struktur-Test mit Umwelt-Struktur-Test (UST-R): AIST-R. Manual* [General Interest Structure Test and Environmental Structure Test]. Hogrefe.
- Campbell, D. P., Hyne, S. A., & Nilsen, D. L. (1992). *Manual for the Campbell interest and skill survey: CISS*. National Computer Systems.
- Chernyshenko, O. S., Stark, S., & Nye, C. D. (2019). Interest measurement. In C. D. Nye, & J. Rounds (Eds.), *Vocational interests in the workplace: Rethinking behavior at work* (pp. 80–96). Routledge. <https://doi.org/10.4324/9781315678924-5>
- Chu, C., Russell, M. T., Hoff, K. A., Jonathan Phan, W. M., & Rounds, J. (2022). What do interest inventories measure? The convergence and content validity of four RIASEC inventories. *Journal of Career Assessment*, 30(4), 776–801. <https://doi.org/10.1177/10690727221081554>
- Danner, D., Rammstedt, B., Bluemke, M., Lechner, C., Berres, S., Knopf, T., Soto, C., & John, O. (2019). Das Big Five Inventar 2: Validierung eines Persönlichkeitsinventars zur Erfassung von 5 Persönlichkeitsdomänen und 15 Facetten [The Big Five Inventory 2: Validating a personality inventory to measure 5 personality domains and 15 facets]. *Diagnostica*, 65(3), 1–12. <https://doi.org/10.1026/0012-1924/a000218>
- Darcy, M. U. A., & Tracey, T. J. G. (2007). Circumplex structure of Holland's RIASEC Interests across gender and time. *Journal of Counseling Psychology*, 54(1), 17–31. <https://doi.org/10.1037/0022-0167.54.1.17>
- Day, S. X., & Rounds, J. (1998). Universality of vocational interest structure among racial and ethnic minorities. *American Psychologist*, 53(7), 728–736. <https://doi.org/10.1037/0003-066X.53.7.728>
- DeCeanne, A., Lewis, P., & Rounds, J. (2017, April). A RIASEC snapshot of the modern U.S. workforce [Poster presentation]. 32nd Annual Conference of the Society for Industrial and Organizational Psychology, Orlando, FL.
- Donnay, D. A. C., Morris, M. L., Schaubhut, N. A., & Thompson, R. C. (Eds.), (2005) *Strong Interest Inventory manual: Research, development, and strategies for interpretation*. CPP, Inc.
- Ghetta, A., Hirschi, A., Herrmann, A., & Rossier, J. (2018). A psychological description of the Swiss labor market from 1991 to 2014: Occupational interest types, gender, salary, and skill level. *Swiss Journal of Psychology*, 77(2), 83–94. <https://doi.org/10.1024/1421-0185/a000206>
- Hanna, A., & Rounds, J. (2020). How accurate are interest inventories? A quantitative review of career choice hit rates. *Psychological Bulletin*, 146(9), 765–796. <https://doi.org/10.1037/bul0000269>
- Hansen, J.-I. C. (2019). Interest inventories. In G. Goldstein, D. N. Allen, & J. DeLuca (Eds.), *Handbook of psychological assessment* (pp. 169–190). Academic Press. <https://doi.org/10.1016/B978-0-12-802203-0.00006-7>
- Hoff, K. A., Song, Q. C., Einarsdóttir, S., Briley, D. A., & Rounds, J. (2020). Developmental structure of personality and interests: A four-wave, 8-year longitudinal study. *Journal of Personality and Social Psychology*, 118(5), 1044–1064. <https://doi.org/10.1037/pspp0000228>

- Hoff, K. A., Song, Q. C., Wee, C. J. M., Phan, W. M. J., & Rounds, J. (2020). Interest fit and job satisfaction: A systematic review and meta-analysis. *Journal of Vocational Behavior*, 123, Article 103503. <https://doi.org/10.1016/j.jvb.2020.103503>.
- Holland, J. L. (1959). A theory of vocational choice. *Journal of Counseling Psychology*, 6(1), 35–45. <https://doi.org/10.1037/h0040767>
- Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Psychological Assessment Resources.
- Holland, J. L., Fritzsche, B. A., & Powell, A. B. (1994). *The self-directed search (SDS)*. Technical manual. Psychological Assessment Resources.
- Holland, J. L., & Gottfredson, G. D. (1992). Studies of the hexagonal model: An evaluation (or, the perils of stalking the perfect hexagon). *Journal of Vocational Behavior*, 40(2), 158–170. [https://doi.org/10.1016/0001-8791\(92\)90063-6](https://doi.org/10.1016/0001-8791(92)90063-6)
- Hubert, L., & Arabie, P. (1987). Evaluating order hypotheses within proximity matrices. *Psychological Bulletin*, 102(1), 172–178. <https://doi.org/10.1037/0033-2909.102.1.172>
- Kelley, K. (2018). *MBESS: the MBESS R package* (version 4.4.3) [Computer software]. <https://CRAN.R-project.org/package=MBESS>
- Lewis, P., & Rivkin, D. (1999). *Development of the O*NET Interest Profiler*. U.S. Department of Labor National O*NET Resource Center. https://www.onetcenter.org/dL_files/IP.pdf
- Long, L., & Tracey, T. J. G. (2006). Structure of RIASEC scores in China: A structural meta-analysis. *Journal of Vocational Behavior*, 68(1), 39–51. <https://doi.org/10.1016/j.jvb.2005.01.002>
- Low, D. K. S., Yoon, M., Roberts, B. W., & Rounds, J. (2005). The stability of vocational interests from early adolescence to middle adulthood. A quantitative review of longitudinal studies. *Psychological Bulletin*, 131(5), 713–737. <https://doi.org/doi.org/10.1037/0033-2909.131.5.713>
- Mair, P., Groenen, P. J. F., & de Leeuw, J. (2022). More on multi-dimensional scaling and unfolding in R: smacof version 2. *Journal of Statistical Software*, 102(10), 1–47. <https://doi.org/10.18637/jss.v102.i10>
- Morris, J. (2021). *A weighted O*NET keyword search (WWS)*. U.S. Department of Labor National O*NET Resource Center. https://www.onetcenter.org/dL_files/WWS.pdf
- Mount, M. K., Barrick, M. R., Scullen, S. M., & Rounds, J. (2005). Higher-order dimensions of the Big Five personality traits and the Big Six vocational interest types. *Personnel Psychology*, 58(2), 447–478. <https://doi.org/10.1111/j.1744-6570.2005.00468.x>
- Nagy, G., Etzel, J. M., & Lüdtke, O. (2019). Integrating covariates into circumplex structures: An extension procedure for Browne's circular stochastic process model. *Multivariate Behavioral Research*, 54(3), 404–428. <https://doi.org/10.1080/00273171.2018.1534678>
- Nagy, G., Trautwein, U., & Lüdtke, O. (2010). The structure of vocational interests in Germany: Different methodologies, different conclusions. *Journal of Vocational Behavior*, 76(2), 153–169. <https://doi.org/10.1016/j.jvb.2007.07.002>
- Nye, C. D., Su, R., Rounds, J., & Drasgow, F. (2012). Vocational interests and performance: A quantitative summary of over 60 years of research. *Perspectives on Psychological Science*, 7(4), 384–403. <https://doi.org/10.1177/1745691612449021>
- Ones, D. S., & Viswesvaran, C. (1996). Bandwidth–fidelity dilemma in personality measurement for personnel selection. *Journal of Organizational Behavior*, 17(6), 609–626. [https://doi.org/1002/\(SICI\)1099-1379\(199611\)17:6<609::AID-JOB1828>3.0.CO;2-K](https://doi.org/1002/(SICI)1099-1379(199611)17:6<609::AID-JOB1828>3.0.CO;2-K)
- Pässler, K., Beinicke, A., & Hell, B. (2014). Gender-related differential validity and differential prediction in interest inventories. *Journal of Career Assessment*, 22(1), 138–152. <https://doi.org/10.1177/1069072713492934>
- Phan, W. M. J., Amrhein, R., Rounds, J., & Lewis, P. (2019). Contextualizing interest scales with emojis: Implications for measurement and validity. *Journal of Career Assessment*, 27(1), 114–133. <https://doi.org/10.1177/1069072717748647>
- Prediger, D. J. (1982). Dimensions underlying Holland's hexagon: Missing link between interests and occupations?. *Journal of Vocational Behavior*, 21(3), 259–287. [https://doi.org/10.1016/0001-8791\(82\)90036-7](https://doi.org/10.1016/0001-8791(82)90036-7)
- Ralston, C. A., Borgen, F. H., Rottinghaus, P. J., & Donnay, D. A. C. (2004). Specificity in interest measurement: Basic interest scales and major field of study. *Journal of Vocational Behavior*, 65(2), 203–216. [https://doi.org/10.1016/S0001-8791\(03\)00096-4](https://doi.org/10.1016/S0001-8791(03)00096-4)
- Roemer, L. (2023). *O*NET Interest Profiler translation* [Open materials]. <https://osf.io/xhk93/>
- Roemer, L., Stoll, G., Rounds, J., & Ziegler, M. (2023). Why does the trait-state relation in vocational interests differ from that in personality? Exploring interest variability in daily life. *Journal of Research in Personality*, 105, Article 104386. <https://doi.org/10.1016/j.jrp.2023.104386>
- Rottinghaus, P. J., Larson, L. M., & Borgen, F. H. (2003). The relation of self-efficacy and interests: A meta-analysis of 60 samples. *Journal of Vocational Behavior*, 62(2), 221–236. [https://doi.org/10.1016/S0001-8791\(02\)00039-8](https://doi.org/10.1016/S0001-8791(02)00039-8)
- Rounds, J., Armstrong, P. I., Liao, H.-Y., Lewis, P., & Rivkin, D. (2008). *Second generation occupational interest profiles for the O*NET system: Summary*. U.S. Department of Labor National O*NET Resource Center. https://www.onetcenter.org/dL_files/SecondOIP_Summary.pdf
- Rounds, J., Hoff, K. A., & Lewis, P. (Eds.), (2021). *O*NET Interest Profiler manual*. U.S. Department of Labor National O*NET Resource Center. https://www.onetcenter.org/reports/IP_Manual.html
- Rounds, J., Phan, W. M. J., Amrhein, R., & Lewis, P. (2016). *Examining the efficacy of emoji anchors for the O*NET Interest Profiler Short Form*. U.S. Department of Labor National O*NET Resource Center. https://www.onetcenter.org/reports/IP_Emoji.html
- Rounds, J., Putka, D. J., & Lewis, P. (2022). *Updating vocational interests information for the O*NET content model*. U.S. Department of Labor National O*NET Resource Center. https://www.onetcenter.org/dL_files/Voc_Interests.pdf
- Rounds, J., & Su, R. (2014). The nature and power of interests. *Current Directions in Psychological Science*, 23(2), 98–103. <https://doi.org/10.1177/0963721414522812>
- Rounds, J., Su, R., Lewis, P., & Rivkin, D. (2010). *O*NET Interest Profiler Short Form psychometric characteristics: Summary*. U.S. Department of Labor National O*NET Resource Center. https://www.onetcenter.org/dL_files/IPSF_Psychometric.pdf
- Rounds, J., Su, R., Lewis, P., & Rivkin, D. (2013). *Occupational Interest Profiles for new and emerging occupations in the O*NET system: Summary*. U.S. Department of Labor National O*NET Resource Center. https://www.onetcenter.org/dL_files/OIP_NewEmerging.pdf
- Rounds, J., & Tracey, T. J. (1993). Prediger's dimensional representation of Holland's RIASEC circumplex. *Journal of Applied Psychology*, 78(6), 875–890. <https://doi.org/10.1037/0021-9010.78.6.875>
- Rounds, J., & Tracey, T. J. (1996). Cross-cultural structural equivalence of RIASEC models and measures. *Journal of Counseling Psychology*, 43(3), 310–329. <https://doi.org/10.1037/0022-0167.43.3.310>
- Rounds, J., Tracey, T. J., & Hubert, L. (1992). Methods for evaluating vocational interest structural hypotheses. *Journal of Vocational*

- Behavior*, 40(2), 239–259. [https://doi.org/10.1016/0001-8791\(92\)90073-9](https://doi.org/10.1016/0001-8791(92)90073-9)
- Rounds, J., Walker, C. M., Day, S. X., Hubert, L., Lewis, P., & Rivkin, D. (1999). *Development of O*NET Interest Profiler: Reliability, validity, and self-scoring*. U.S. Department of Labor National O*NET Resource Center. https://www.onetcenter.org/dl_files/IP_RVS.pdf
- Soto, C. J., & John, O. P. (2017). The next Big Five Inventory (BFI-2): Developing and assessing a hierarchical model with 15 facets to enhance bandwidth, fidelity, and predictive power. *Journal of Personality and Social Psychology*, 113(1), 117–143. <https://doi.org/10.1037/pspp0000096>
- Stoll, G., Einarsdóttir, S., Chelsea Song, Q., Ondish, P., Sun, J.-T., & Rounds, J. (2020). The roles of personality traits and vocational interests in explaining what people want out of life. *Journal of Research in Personality*, 86, Article 103939. <https://doi.org/10.1016/j.jrp.2020.103939>
- Stoll, G., Rieger, S., Lüdtke, O., Nagengast, B., Trautwein, U., & Roberts, B. W. (2017). Vocational interests assessed at the end of high school predict life outcomes assessed 10 years later over and above IQ and Big Five personality traits. *Journal of Personality and Social Psychology*, 113(1), 167–184. <https://doi.org/10.1037/pspp0000117>
- Su, R., Rounds, J., & Armstrong, P. I. (2009). Men and things, women and people: A meta-analysis of sex differences in interests. *Psychological Bulletin*, 135(6), 859–884. <https://doi.org/10.1037/a0017364>
- Su, R., Tay, L., Liao, H.-Y., Zhang, Q., & Rounds, J. (2019). Toward a dimensional model of vocational interests. *Journal of Applied Psychology*, 104(5), 690–714. <https://doi.org/10.1037/apl0000373>
- Torgerson, W. S. (1952). Multidimensional scaling: I. Theory and method. *Psychometrika*, 17(4), 401–419. <https://doi.org/10.1007/BF02288916>
- Tracey, T. J. G. (1997). RANDALL: A Microsoft FORTRAN program for a randomization test of hypothesized order relations. *Educational and Psychological Measurement*, 57(1), 164–168. <https://doi.org/10.1177/0013164497057001012>
- Wehner, C., Roemer, L., & Ziegler, M. (2018). Construct validity. In V. Zeigler-Hill, & T. K. Shackelford (Eds.), *Encyclopedia of personality and individual differences* (pp. 1–3). Springer International Publishing. https://doi.org/10.1007/978-3-319-28099-8_1288-1

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Conflict of Interest

Phil Lewis is a staff member of the National Center for O*NET Development. The other authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Publication Ethics

Informed consent was obtained from all participants included in the study. All procedures in studies involving human participants were performed in accordance with common ethical standards; an ethics committee approval was not obtained.

Open Science

Open Data: The information needed to reproduce all of the reported results is not openly available.

Open Materials: The authors confirm that there is sufficient information for an independent researcher to reproduce all of the reported methodology. Analysis code and output are available at <https://osf.io/xhk93/> (Roemer, 2023).

For the randomization test, we used the R code provided by Tracey: <https://web.asu.edu/tracey/software-0> (last accessed November 9, 2022).

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Appendix

German O*NET Interest Profiler.

	<p>The next questions concern work activities that some people do on their jobs. Read each question carefully and decide how you would feel about doing each type of work:</p> <p>1 = Not at all interesting 2 = Not interesting 3 = Unsure 4 = Interesting 5 = Very interesting</p> <p>Try not to think whether you have enough education or training to do the work; or how much money you would make doing the work. Just think about if you would like or dislike doing the work. There are no right or wrong answers! Please respond to all questions. Please indicate how interested you are in these activities.</p>	<p>Die folgenden Fragen betreffen Arbeitsaktivitäten, die manche Leute an ihren Arbeitsplätzen tun. Lesen Sie jede Frage aufmerksam durch und entscheiden Sie, wie gerne Sie diese Arbeiten tun würden:</p> <p>1 = Interessiert mich überhaupt nicht 2 = Interessiert mich nicht 3 = Unsicher 4 = Interessiert mich 5 = Interessiert mich sehr</p> <p>Versuchen Sie nicht darüber nachzudenken, ob Sie die passende Ausbildung haben, um die Arbeit zu machen; oder wie viel Sie mit dieser Arbeit verdienen würden. Versuchen Sie nur darüber nachzudenken, ob Sie die Arbeit gerne machen würden oder nicht. Es gibt keine richtigen oder falschen Antworten! Bitte beantworten Sie alle Fragen. Bitte geben Sie an, wie interessant Sie diese Aktivitäten finden!</p>
real_1	Build kitchen cabinets	Küchenschränke bauen
real_2	Lay brick or tile	Ziegel oder Fliesen verlegen
inve_1	Develop a new medicine	Neue Medikamente entwickeln
inve_2	Study ways to reduce water pollution	Wege erforschen, um die Wasserverschmutzung zu verringern
arti_1	Write books or plays	Bücher oder (Theater-)Stücke schreiben
arti_2	Play a musical instrument	Ein Musikinstrument spielen
soci_1	Teach an individual an exercise routine	Jemandem eine Sportübung beibringen
soci_2	Help people with personal or emotional problems	Menschen bei persönlichen oder emotionalen Problemen helfen
ente_1	Buy and sell stocks and bonds	Aktien und Anleihen kaufen und verkaufen
ente_2	Manage a retail store	Ein Einzelhandelsgeschäft leiten
conv_1	Develop a spreadsheet using computer software	Softwaregestützt eine Tabelle erstellen
conv_2	Proofread records or forms	Aufzeichnungen und Formulare korrekturlesen
real_3	Repair household appliances	Haushaltsgeräte reparieren
real_4	Raise fish in a fish hatchery	In einer Fischzucht Fische züchten
inve_3	Conduct chemical experiments	Chemische Experimente durchführen
inve_4	Study the movement of planets	Planetenbewegung beobachten
arti_3	Compose or arrange music	Musik komponieren oder arrangieren
arti_4	Draw pictures	Bilder zeichnen
soci_3	Give career guidance to people	Karriereberatungen für Menschen anbieten
soci_4	Perform rehabilitation therapy	Rehabilitationstherapien durchführen
ente_3	Operate a beauty salon or barber shop	Einen Schönheitssalon oder Friseurgeschäft betreiben
ente_4	Manage a department within a large company	Eine Abteilung in einem großen Unternehmen leiten
conv_3	Install software across computers on large network	In einem großen Computernetzwerk Software installieren
conv_4	Operate a calculator	Einen Taschenrechner bedienen
real_5	Assemble electronic parts	Elektroteile zusammenbauen
real_6	Drive a truck to deliver packages to offices and homes	Mit einem Lieferwagen Pakete an Büros und Wohnhäuser liefern
inve_5	Examine blood samples using a microscope	Mit einem Mikroskop Blutproben untersuchen

(Continued on next page)

(Continued)

inve_6	Investigate the cause of a fire	Die Ursache für einen Brand ermitteln
arti_5	Create special effects for movies	Spezialeffekte für Filme erstellen
arti_6	Paint sets for plays	Bühnenbilder malen
soci_5	Do volunteer work at a nonprofit organization	Ehrenamtlich für eine nonprofit Organisation arbeiten
soci_6	Teach children how to play sports	Kindern Sport unterrichten
ente_5	Start your own business	Ein eigenes Unternehmen gründen
ente_6	Negotiate business contracts	Geschäftsverträge verhandeln
conv_5	Keep shipping and receiving records	Über Wareneingang und -ausgang Buch führen
conv_6	Calculate the wages of employees	Arbeitnehmerlöhne berechnen
real_7	Test the quality of parts before shipment	Vor dem Versand (Einzel)Teile auf Qualität überprüfen
real_8	Repair and install locks	Schlösser reparieren und installieren
inve_7	Develop a way to better predict the weather	Eine Möglichkeit entwickeln, um das Wetter besser vorherzusagen
inve_8	Work in a biology lab	In einem Biologie-Labor arbeiten
arti_7	Write scripts for movies or television shows	Drehbücher für Filme oder Fernsehserien schreiben
arti_8	Perform jazz or tap dance	Jazz-oder Steptanz aufführen
soci_7	Teach sign language to people who are deaf or hard of hearing	Gehörlosen Menschen Gebärdensprache beibringen
soci_8	Help conduct a group therapy session	Bei der Durchführung einer Gruppentherapiesitzung helfen
ente_7	Represent a client in a lawsuit	Bei einem Gerichtsverfahren einen Klienten vertreten
ente_8	Market a new line of clothing	Eine neue Modedesignkollektion vermarkten
conv_7	Inventory supplies using a hand-held computer	Waren mit einem Taschencomputer inventarisieren
conv_8	Record rent payments	Mietzahlungen aufzeichnen
real_9	Set up and operate machines to make products	Maschinen für die Produktion einrichten und bedienen
real_10	Put out forest fires	Waldbrände löschen
inve_9	Invent a replacement for sugar	Einen Zuckerersatz erfinden
inve_10	Do laboratory tests to identify diseases	Labortests zur Identifikation von Erkrankungen durchführen
arti_9	Sing in a band	In einer Band singen
arti_10	Edit movies	Filme schneiden
soci_9	Take care of children at a day-care center	Kinder in einem Kindergarten betreuen
soci_10	Teach a high-school class	Eine Schulklasse (ab 9. Klasse) unterrichten
ente_9	Sell merchandise at a department store	In einem Kaufhaus Waren verkaufen
ente_10	Manage a clothing store	Ein Bekleidungsgeschäft leiten
conv_9	Keep inventory records	Inventarlisten führen
conv_10	Stamp, sort, and distribute mail for an organization	Post für ein Unternehmen stempeln, sortieren und verteilen

Note. The English instructions provided here are a direct translation from the instructions used in the German O*NET IP and slightly deviate from the instructions of the original web-based O*NET IP (<https://www.mynextmove.org/explore/ip>).