

Personality Homogeneity in Organizations and Occupations: Considering Similarity Sources

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Abstract

Purpose The purpose of this study was to investigate organizational and occupational homogeneity, compare homogeneity at different levels of composition, and uncover a mechanism for homogeneity.

Design/Methodology/Approach Data were obtained from an archival data base of current employees ($N = 23,933$) in 40 organizations, 19 major job groupings, 42 minor job groupings, and 115 detailed job titles.

Findings Support for homogeneity within organizations and occupations was found, regardless of the granularity with which occupation were defined. Homogeneity estimates were smaller than prior estimates in the literature based on smaller, less diverse samples. Occupational homogeneity was significantly greater than homogeneity at the organizational level for neuroticism and extraversion. As a potential mechanism, we demonstrated that occupational interest could predict personality at the occupational level.

Implications Investigating homogeneity effects with a large, representative sample and simultaneously considering occupation and organization helps to advance our

theoretical understanding of the Attraction–Selection–Attrition process. This study provides evidence of relative homogeneity effects and mechanisms. Such knowledge could help inform the selection, training, and socialization tactics employed by practitioners.

Originality/Value Little is currently known about how within-occupation homogeneity in personality relates to within-organization homogeneity, or the influence of vocational interests on such homogeneity. We provide a methodological update to decompose and compare organizational and occupational influence on personality homogeneity. We also assess homogeneity at three levels of occupational granularity, and delineate a mechanism for personality to become homogeneous at the occupation level.

Keywords Attraction–Selection–Attrition · Vocational choice · Organizational homogeneity · Occupational homogeneity · Personality · Interests

Introduction

Person–environment (PE) fit underlies membership processes in occupations and organizations as individuals choose vocations and employers where they feel a sense of fit in terms of personal characteristics. Researchers have particularly focused on how PE fit processes lead to homogeneity in the personalities of those within organizations and occupations. According to the Attraction–Selection–Attrition (ASA) model (Schneider 1987), individuals are attracted to working in organizations with similar others, organizations select individuals who are similar to those already in the organization, and those who are dissimilar tend to leave or be terminated. Personality

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homogeneity ensues with members of the same organization exhibiting similar personality characteristics. Similarly, the vocational choice literature (Holland 1966, 1985) suggests that individuals with similar personalities develop similar interests, gravitate toward occupations that match those, and thus similar people tend to occupy the same jobs.

Researchers have come to recognize that both occupational and organizational membership should be considered as forces toward homogeneity (Schneider and Schneider 1994) and thus should be modeled in tandem (Schaubroeck et al. 1998). Recent work in this area has further tested the hypothesis that occupational homogeneity outweighs organizational homogeneity, as vocational choice precedes organizational choice (Bradley-Geist and Landis 2012) and the occupational environment tends to be more proximal than the organizational environment (Ployhart et al. 2006; Satterwhite et al. 2009). However, the three studies (Bradley-Geist and Landis 2012; Ployhart et al. 2006; Satterwhite et al. 2009) examining this hypothesis have yielded inconsistent conclusions. More importantly, as we discuss below, all three studies sampled from a small number of organizations with restricted types of occupations included which might have introduced bias in the estimate of personality homogeneity. This paper seeks to further previous findings by providing simultaneous estimates of occupational and organizational influence on personality homogeneity with a large, diverse sample of occupations and organizations.

The aim of this paper is to expand knowledge on personality homogeneity in organizations and occupations in three ways. First, we provide a methodological update to decompose and compare organizational and occupational influence on personality homogeneity.

Estimates of personality homogeneity can potentially be biased by the use of restricted samples.

For instance, if a sample only includes employees from a certain industry in the analysis, or only investigates managers as the occupational group, total variability could be downwardly estimated, resulting in an inflated estimate of homogeneity. Unlike past studies (e.g., Jordan et al. 1991; Schaubroeck et al. 1998), we assess the homogeneity effects across 40 organizations from a variety of industries with data from at least 76 employees per organization to obtain a more robust test of the homogeneity hypothesis.

Second, we improve upon previous assessments of occupational homogeneity by assessing homogeneity at 3 levels of occupational granularity based on the Occupational Information Network (O*NET) classification system. Studies on occupational homogeneity have often looked at only a few, broad occupational categories (e.g., only managers in Bradley-Geist and Landis 2012; broad census groups in Satterwhite et al. 2009) or at more specific jobs

but within only one occupational category (service occupations, Ployhart et al. 2006). By assessing whether more narrowly defined occupations exhibit greater homogeneity, we expand our current understanding of the extent of occupational homogeneity effects.

Finally, although past studies have demonstrated occupational personality homogeneity, the exact source of the homogeneity is left unexamined. Because vocational choices are driven in part by interests, and because research has established linkages between occupational interests and personality at the individual level (Mount et al. 2005), we examine interests at the occupation level as a magnet that attracts particular personality traits, thus delineating a mechanism for personality to become homogeneous at the occupation level.

Within the following sections, an introduction to the PE fit theoretical framework is presented. We then discuss how organizational and occupational homogeneity might arise and present both specific hypotheses regarding homogeneity at different levels of composition and a mechanism for homogeneity at the occupational level.

Person–Environment Fit and Personality

PE fit is broadly defined as compatibility between individual's characteristics and features of the environment—compatibility occurs when individual and contextual characteristics are well matched (Kristof-Brown et al. 2005). PE fit theories have two fundamental assumptions: (1) people have a basic need to fit their environment and therefore they seek out environments that match their characteristics, and (2) the degree of fit between people and their environment is positively related to important individual outcomes and career decisions (Van Vianen et al. 2013). Several types of PE fit have garnered research attention: vocation (person–vocation fit), job (need-supplies fit and demands–abilities fit), work team (person–team fit), and organization (person–organization fit). Schneider's (1987) theory of ASA and Holland's (1985) model of vocational fit are two main PE fit theories that have dominated research in organizational psychology (Van Vianen et al. 2013) concerning person–organization and person–vocation fit, respectively.

Although both the ASA (Schneider 1987) model and Holland's vocational choice framework (1985) propose person–environment fit effects, their focus is on different levels of fit. The ASA framework proposes a cycle that influences *organizational* membership, while the vocational choice theory focuses on influences on membership at the *occupational* level. In spite of this distinction, these theories provide parallel discussions for understanding homogeneity in personality, as both frameworks assert that individuals actively choose settings they fit.

Both theories assert that, in aggregate, the characteristics of the individuals who join an organization or occupation shape the overall characteristics of that group on which fit assessments are based, and that personality is a major characteristic of focus for determining fit. ASA states that that “different kinds of organizations attract, select, and retain different kinds of people, and it is the outcome of the ASA cycle that determines why organizations look and feel different from each other” (Schneider 1987, p. 440). In a parallel manner, vocational psychology tells us that people are differentially attracted to certain occupations as a function of their own interests, and that not only can career interests be grouped into major types, but career environments can also be grouped in this way. Holland (1985) further asserts, “the character of an environment emanates from the types [of people] which dominate that environment” (p. 534).

In terms of the characteristic of interest in determining fit, Schneider and colleagues state, “although not specified by B. Schneider, the clear implication in his 1987 paper is that the attributes of interest are personality and values” (Schneider et al. 1995, p. 749). Similarly, Holland’s model of vocational choice characterizes people and environments by their resemblance to six personality types and states that, “we can reinterpret vocational interests as an expression of personality” (Holland 1985, p. 8). Ryan and Kristof-Brown (2003) further argue for the importance of personality as a determining factor of fit. In detailing several reasons to expect that “fit based on personality should be at least as influential as fit based on values” (Ryan and Kristof-Brown 2003, p. 265), these authors argue that personality traits are more stable, proximal to behavior, and observable than values. Overall, both theories suggest, “similar kinds of people are likely to have similar kinds of personalities, are likely to choose to do similar kinds of things, and are likely to behave in similar kinds of ways” (Schneider 1987, p. 441). These theories provide a strong basis for expecting organizational and occupational personality homogeneity, discussed in more detail in the next sections.

ASA and Organizational Homogeneity

The ASA model, derived from interactional psychology roots, suggests that environments are outcomes of people and their behavior (i.e., “the people make the place”; Schneider 1987). The model is based on the assumption that people are not randomly assigned to an organization, but that they have stable preferences and values that influence their organizational memberships (Schneider 1987). The ASA model suggests that individual preferences for particular employers are based on the implicit estimate of the congruence between personal and

organizational characteristics (Schneider et al. 1995). The *attraction* aspect of the ASA model is supported by research conducted by Tom (1971) who suggested that applicants who are most attracted to organizations they perceive are similar to themselves. The next step of the ASA cycle concerns the *selection* procedures used by organizations. Organizations seek out individuals who will perform well and fit in with the current culture (Holland 1966, 1985; Spokane 1985), and hiring agents tend to select those who are similar to others in the organization (Kinicki and Lockwood 1985; Schneider 1987). These tendencies should result in persons having common personality traits within the same organization. However, incorrect assessments of organizational or applicant traits by the applicant or hiring authorities, respectively, can lead to misfit between organizational characteristics and those of an employee. The last aspect of the ASA model, *attrition*, refers to individuals leaving or being removed from organizations when they do not fit. When the fit of personal characteristics to the organizational environment is high, employees are less likely to turnover, and are more satisfied, committed, and productive (Jackson et al. 1991; O’Reilly et al. 1991). Similar ideas have been explored in sociology using social network analysis. For example, McPherson et al. (2001) note that the desire to be with similar others, otherwise known as *homophily*, drives the strength of ties within organizations. In the homogeneity hypothesis, Schneider (1987) proposes that the ASA process is iterative, such that differences in personality between organizational members become smaller than the personality differences between organizations.

A number of empirical investigations in the organizational sciences have directly tested the proposed outcome of the ASA cycle, personality homogeneity at the organizational level (e.g., Bradley-Geist and Landis 2012; Halfhill et al. 2008; Jordan et al. 1991; Ployhart et al. 2006; Satterwhite et al. 2009; Schaubroeck et al. 1998; Schneider et al. 1998). For example, Jordan et al. (1991) showed similarity within organizations in response to the Sixteen Personality Factor Questionnaire for managers in four organizations. Bradley-Geist and Landis (2012) also examined homogeneity within 25 organizations using the Myers–Briggs Type Indicator. However, despite the existence of several studies evaluating the homogeneity of personality at the organizational level, there are some methodological limitations to this body of research.

Many of the studies have small samples within organizations or involve only a few organizations. Assessing employee homogeneity requires a sufficient sample size within organizations to obtain a stable estimate of similarity. In addition, assessing generalizability requires a sufficient sample of organizations as restricted sampling may lead to an inflated estimate of homogeneity. Further,

studies to date varied in how and if they considered individual nesting in occupations and organizations. Thus, in this study, we provide a more rigorous assessment of homogeneity with a large sample of organizations, large numbers of employees, and multiple personality traits, considering nesting of occupations in organizations.

Hypothesis 1 People within an organization will exhibit similar personality characteristics (homogeneity).

Holland's Model and Occupational Homogeneity

Holland (1966, 1985) provided a stream of research suggesting people naturally select themselves into and out of careers that they fit. A number of studies demonstrate that members of the same “occupation” have similar personalities and demonstrate significant personality differences across job functions (e.g., Bradley-Geist and Landis 2012; Jordan et al. 1991; Satterwhite et al. 2009; Schaubroeck et al. 1998). However, some of these studies have used very broad categories (e.g., manager, Bradley-Geist and Landis 2012; professional, finance, Jordan et al. 1991; Satterwhite et al. 2009; occupations high in mental ability or social requirements, Schaubroeck et al. 1998). Others were limited to one industry (service, Ployhart et al. 2006), which may have led to lower total variability and hence inflated estimates of within-occupation homogeneity.

Besides the sampling limitations, research to date has not considered that the specificity of occupational groupings is likely to influence occupational personality homogeneity. More granular occupational groupings likely have greater consistency of task activities, interpersonal demands, and work environment than broader occupational groupings. For example, the day-to-day work experiences of workers in the *Life, Physical, and Social Science Occupations* may vary widely; the experiences of *Social Scientists* likely vary to a lesser extent. Given that individuals seek out environments that match their characteristics, the consistency in context of specific occupations should result in more consistency in personality than wider “families” of occupations. To test this notion, we looked at different levels of occupational similarity in personality based on the Occupational Information Network (O*NET) classification system—from the broadest category of major groupings (occupations with similar required skill, education, training, and credentials), to minor groupings (more specialized job types that fit into the same major groupings) and to detailed job titles (specific position held within a minor job grouping), with the expectation of increasing personality similarity at the more specific levels.

Hypothesis 2 People within an occupation will exhibit similar personality characteristics (homogeneity).

Hypothesis 3 Personality homogeneity will increase with more granular occupational definitions, such that there will be greater levels of homogeneity within detailed job titles than within minor job groupings, which will show greater homogeneity than within major job groupings.

Occupational Versus Organizational Homogeneity

One interesting question is whether occupational homogeneity is greater than organizational homogeneity. If people differ in personalities across occupations, that variance should “work against” finding organizational homogeneity in personalities when organizational members hold diverse jobs. For example, Schneider (1994) showed how accountants in four accounting firms share some attributes (life history experiences) that distinguish them from lawyers in the same firms, but differ significantly on other attributes with accountants in other firms. Bradley-Geist and Landis (2012) argued that as occupational choice occurs before organization choice, we should expect greater homogeneity in occupational groups than organizations. Similarly, Schaubroeck et al. (1998) noted that “personality homogenization occurs differently and more strongly” within occupational groups than across organizations. Ployhart et al. (2006) examined personality homogeneity in occupation *within* an organization using completely nested data, by treating each job within each organization as a different occupation. Their results showed greater composition similarity within jobs than in organizations. Using partially nested data, Satterwhite et al. (2009) reached a similar conclusion, but Bradley-Geist and Landis did not find support.

As mentioned previously, prior work was methodologically limited, in that studies tended to investigate only broad occupational groups or single industries, i.e., the sample may have had range restriction in personality. We seek to overcome that limitation here with a larger occupationally diverse sample, with multiple layers of granularity in defining occupations, and with robust methods for decomposing variance.

Hypothesis 4 Personality homogeneity will be greater at the occupational level than at the organizational level.

Mechanism for Occupational Homogeneity Effects

One final question we address is the mechanism by which occupational homogeneity in personality occurs. The fact that interests relate to personality at the individual level is well established. Mount et al. (2005) presented the meta-analytic, higher-order relationships between interests and personality traits. Moderate correlations were observed between extraversion and enterprising interests ($\rho = .40$),

openness to experience and artistic interests ($\rho = .41$), extraversion and social interests ($\rho = .29$), and openness to experience and investigative interests ($\rho = .25$). Their results also demonstrated links via the assessment of personality traits and preferences for certain activities (e.g., extraversion was associated with the desire to interact with other people and openness was associated with a desire for abstract tasks).

This individual level research is informative, but it does not speak to the relationships between interests and personality at the occupational level. Individuals should be attracted to occupations where their own personalities align with the interests of those in the occupation; thus, personality at the aggregate occupation level should align with occupational level interests. By assessing interest's relation to personality at the occupational level, we were able to test the assumed mechanism underlying occupational homogeneity while using the appropriate level of analysis. Note that while there are different frameworks for discussing occupational interests, we examined one of the most basic (i.e., whether the occupation emphasizes people, things, data or ideas), as it subsumes others (e.g., RIASEC).

Hypothesis 5 Levels of occupational interests (on people-things and data-ideas dimensions) will relate to average personality trait levels for occupation.

Method

Participants

We culled data for the current study from a large personality data archive. The personality inventory was administered as a part of an online assessment. The assessment was used mostly (i.e., approximately 90 %) in workplace settings and was initiated by trained organizational consultants or human resources professionals. The remaining assessments were completed in nonprofit, career services, and educational settings by trained practitioners. The assessment was used primarily for development purposes (e.g., team building and career counseling), but was occasionally used for summative purposes (e.g., employee selection and succession planning).

Responses were included in this study when they met the following criteria: (a) respondents provided information about their job titles that enabled direct linking to Standard Occupational Classification (SOC) job titles and (b) respondents were current employees of a given organization, thus precluding applicants' responses collected during selection testing as they may not have become organization members.

The final sample included 23,933 responses from 40 organizations (N s ranging from 76 to 7524) administered from 2007 to 2013. Participants were on average 40 years old ($SD = 11$) at the time of survey, with 57 % males and 74 % Caucasians. Modal education level was a college degree (69 %), followed by 16 % who attended some college and 12 % who completed high school.

The SOC job titles were used to classify jobs in the current study. The SOC system is used by U.S. federal agencies to categorize occupations. It is aligned with the O*NET database compiled by the U.S. Department of Labor (National Center for O*NET Development 2010). O*NET job categories summarize occupations at different levels of granularity, with major job groupings providing the widest level grouping (e.g., finance and insurance), followed by minor job (e.g., financial specialists), broad occupation, and detailed occupation groupings (e.g., investment underwriters; Bureau of Labor Statistics 2010). In the present data, classification of broad occupations (O*NET's third level of detail) did not differ substantially from detailed occupational groups. Thus, we focused our analyses on three levels of granularity: the major, minor, and detailed occupation groupings, and excluded broad occupational groupings. The data included 115 detailed job titles (N s ranging from 3 to 2169), 42 minor job groupings (N s ranging from 23 to 4775), and 19 major job groupings (N s ranging from 32 to 7475).

Measures

Personality

The Birkman method (Birkman et al. 2013) is a 298-item personality and occupational interest assessment tool. Eighty-eight of the items measure self-reported personality on five broad personality orientations. These personality measures have been validated using exploratory and confirmatory factor analysis, classical test theory, and item response theory (online technical report, Birkman International, Inc. 2013; technical manual, Birkman et al. 2013) as well as used in other research studies (Ott-Holland et al. 2013, 2014). The Birkman method manual (Birkman et al. 2008) presents reliability and validity evidence. Of the five potential personality orientations, test-retest reliabilities across a 2-week sample were the highest for the emotive (.91), social (.91), and process orientations (.88). In addition, convergent construct validity can be found in the manual, and these results also demonstrate the strongest and most consistent evidence in support of these three orientations. To detail some of the relationships: the Myers-Briggs Type Indicator (Briggs-Myers et al. 2003) interaction preference scale had a significant correlation

with the Birkman social orientation scale ($r = .74$); the Birkman method and 16 Personality Factor Questionnaire (Conn and Rieke 1994) demonstrated expected, significant relationships between emotive orientation and emotional stability ($r = -.30$), social orientation and warmth ($r = .25$), and process orientation and dutifulness/conscientiousness ($r = .27$). Correlations corrected for attenuation due to unreliability are critical for the accurate estimation of variable relationships, as observed correlations are distorted by random measurement error in either of the two measures assessed (Schmidt and Hunter 1996; Schmitt 1996). Corrected correlations between social orientation and extraversion (.70), emotive orientation and neuroticism (.25), and process orientation and conscientiousness (.81) bolster claims of these scales' positive relationships (Costa and McCrae 1992).

As noted above, we focused our analyses on personality ratings on three personality orientations that conceptually map on three Big Five scales (Birkman International, Inc. 2013; Ott-Holland et al. 2014). Social orientation (extraversion) refers to the extent to which individuals seek out social interactions (25 items; $\alpha = .86$). Emotive orientation (neuroticism) describes the extent to which individuals experience intense emotions in response to life events (22 items; $\alpha = .88$). Process orientation (conscientiousness) represents the extent to which individuals are cautious and disciplined (15 items; $\alpha = .71$). Scale scores are typically generated by summing dichotomous items; here, we averaged dichotomous item responses to aid interpretation. Based on the reliability and validity evidence, we decided to exclude the two other Birkman orientations—control orientation that captures the tendency to be commanding and opinionated and change orientation that captures the tendency to prefer unpredictable and novel situations—these two measures did not converge as well with existing Big Five measures.

Occupational Interests

We operationalized the people-things and data-ideas dimensions (Prediger 1982) of vocational interests at the occupation level with interest ratings from O*NET. Specifically, O*NET ratings of Holland's (1985) six vocational interests—realistic, investigative, artistic, social, enterprising, and conventional—have been shown to adhere to the people-things and data-ideas two-dimensional structure (Huang and Pearce 2013), so we chose to focus on this more parsimonious structure. Following Huang and Pearce (2013) as well as past research (Prediger 1982; Tracey and Rounds 1996), we subjected the six interest scales to a principal component analysis, which summarized the observed data into two components that account for 64 % of observed variance in interests (see Huang and

Pearce 2013; Table 2). We saved the component scores as two bipolar variables of people-things and data-ideas for subsequent analysis. As 8 out of the 115 detailed job titles did not have interest ratings available on O*NET, only 21,241 individuals (89 % of total data) were included in the analysis involving occupational interest.

Results

Descriptive statistics and intercorrelations for personality traits and the vocational interest variables at the individual level are presented in Table 1.

Plan of Analysis

Both direct and indirect indices can be used to test for the homogeneity hypotheses (Bliese 2000). Specifically, direct indices such as r_{wg} and AD focus on exact agreement in responses to items within the unit, whereas indirect indices such as ICC(1) focus on variance partitioning to infer within-unit homogeneity (Bradley-Geist and Landis 2012). In the current study, we assessed differentiation between occupations and organizations with ICC(1). The current data were cross-classified (Goldstein 2003; Raudenbush and Bryk 2002) in that an individual did not belong to a single higher-level unit, but rather belonged to an organization *and* an occupation simultaneously; neither of these grouping factors (i.e., organization or occupation) was nested within each other nor were they fully crossed. Given the current data structure, we partitioned variance due to (a) organization, (b) occupation, and (c) organization by occupation interaction separately. Specifically, using the lme4 package for linear mixed-effects models in R (Bates et al. 2015), we estimated variance components in a random intercept model where an individual's response to a personality scale was a simultaneous function of (a) the grand mean, (b) his/her organizational membership, (c) his/her occupational group, (d) his/her combination of organizational membership and occupational group, and (e) the residual. Subsequently, we calculated ICC(1) as the proportion of variance organization (or occupation) contributed in relation to total variance (see Raudenbush and Bryk 2002, p. 378).

Although researchers have relied on a somewhat arbitrary cutoff of .12 or above for ICC(1) values as evidence of degree of homogeneity (Schneider et al. 1998; Ployhart et al. 2006), we directly tested the hypothesis surrounding ICC(1) values associated with organization and occupation by estimating 95 % confidence intervals for the ICC(1) values with the Markov Chain Monte Carlo (MCMC) algorithm. Simply put, following the Bayesian paradigm that estimates a population parameter as a distribution of

Table 1 Descriptive statistics and intercorrelations at the individual level of analysis

| | <i>M</i> | <i>SD</i> | 1 | 2 | 3 | 4 |
|----------------------|----------|-----------|---------|--------|--------|--------|
| 1. Neuroticism | .24 | .22 | | | | |
| 2. Extraversion | .68 | .21 | −.49*** | | | |
| 3. Conscientiousness | .67 | .19 | −.37*** | .19*** | | |
| 4. People-things | .65 | .75 | −.07*** | .15*** | −.01 | .45*** |
| 5. Data-ideas | .85 | .85 | −.08*** | .15*** | .10*** | |

Correlation at the individual level of analysis, $N = 21,241$ when involving interest variables and $N = 23,933$ between personality variables

*** $p < .001$

values, the MCMC algorithm combines a set of priors (in the current case, the default noninformative priors) and the information from the sample data to create a posterior distribution of parameter estimates (Finch et al. 2014). For each random intercept model above, we performed the MCMC analysis using the MCMCglmm package (Hadfield 2015) in R, and calculated a posterior distribution of 1000 sets of variance estimates. We then obtained the lower and upper bounds of the 95 % confidence interval from the posterior distribution of variance estimates.¹

To model vocational interests at the occupational level as potential drivers for occupational homogeneity, we added the fixed effects of people-things and data-ideas to the initial random intercept model. Significance levels of the fixed effects were obtained from the lmerTest package (Kuznetsova et al. 2015) in R.

Organizational and Occupational Homogeneity

Hypotheses 1 and 2 state that personality characteristics will be homogeneous within an organization (H1) and within an occupation (H2, operationalized here as O*NET detailed job title; see below for information on other occupational levels). Following the procedure outlined above, we computed variance components due to organization and occupation simultaneously and estimated ICC(1) values. As shown in Table 2, organizational membership accounted for 2 % of variance in neuroticism and extraversion and 4 % of variance in conscientiousness. The ICC(1) values were significantly different from zero, as shown in the lower limits of the 95 % CI, thus providing support for Hypothesis 1. That is, employees working within the same organizations tend to have more similar personality traits with one another, as opposed to with those in other organizations. However, it should be

recognized that the ICC(1) values were much lower than the estimates reported in other studies that had less variability in the sample (e.g., Ployhart et al. 2006), and the present finding of significant homogeneity could be attributed in part to the large sample size. Thus, interpretation of these significant findings should be tempered in light of the small effect size and the large sample size.

Similar support was found for Hypothesis 2, as occupational grouping accounted for 4, 6, and 3 % of variance in neuroticism, extraversion, and conscientiousness, respectively, with lower limits of the 95 % CIs above 0. In other words, individuals in the same occupations tend to exhibit more similar personality traits to each other than they do to those working in different occupations. We also explored the interaction of organizational and occupation and found that the categorization of employees based on both occupation and organization simultaneously explained 2, 1, and 2 % of variance in neuroticism, extraversion, and conscientiousness, respectively. Again, despite support for the homogeneity hypothesis at the occupation level, these findings were relatively small in comparison to previous work.

Granularity of Occupational Definitions

Hypothesis 3 states that higher personality homogeneity will be observed when a more granular occupational grouping is applied. To test the hypothesis, we applied two coarser occupational groupings (minor job groupings and major job groupings) for the same analyses above. Results in Table 3 were in line with the hypothesis for neuroticism and extraversion: weaker ICC(1) values were observed when less granular occupational definitions were used. However, the differences in ICC(1) values were not statistically significant, as seen in the overlapping confidence intervals. As for conscientiousness, the pattern of results was inconsistent with Hypothesis 3: ICC(1) due to occupation was 3 % at specific job level (Table 2) and 4 % at both minor grouping level and major grouping level (Table 3). As a whole, Hypothesis 3 was not supported by the current data.

¹ An initial inspection of MCMC results revealed that a lag of 100 was necessary to minimize autocorrelations of the estimates for each parameter. Thus, we performed 130,000 iterations of the MCMC algorithm with 30,000 burn-in iterations and a thinning parameter of 100. We checked convergence of solutions by inspecting the parameter estimation plots for random effects (see Finch et al. 2014).

Table 2 Variance component and intraclass correlation estimates

| | Neuroticism | Extraversion | Conscientiousness |
|--|-------------|--------------|-------------------|
| Variance components | | | |
| Organization | 0.0008 | 0.0008 | 0.0013 |
| Occupation | 0.0018 | 0.0024 | 0.0011 |
| Organization × occupation | 0.0008 | 0.0005 | 0.0007 |
| Residual | 0.0446 | 0.0390 | 0.0314 |
| ICC(1) | | | |
| Organization | 0.02 | 0.02 | 0.04 |
| Occupation | 0.04 | 0.06 | 0.03 |
| Organization × occupation | 0.02 | 0.01 | 0.02 |
| 95 % CI for ICC(1) based on Markov Chain Monte Carlo | | | |
| Organization <i>LL</i> | 0.01 | 0.01 | 0.02 |
| Organization <i>UL</i> | 0.03 | 0.03 | 0.06 |
| Occupation <i>LL</i> | 0.03 | 0.04 | 0.02 |
| Occupation <i>UL</i> | 0.05 | 0.08 | 0.05 |

N = 23,933 individuals at level 1 and *N* = 115 occupations at level 2

95 % CI 95 % confidence interval, *LL*(*UL*) lower (upper) limit of the 95 % CI

Occupational Versus Organizational Homogeneity

In line with the expectation of Hypothesis 4, for extraversion, the variance due to occupation was larger than the variance due to organization (Table 2). Indeed, the 95 % CIs for ICC(1)s for organization and occupation did not overlap, indicating that occupational grouping explained significantly more homogeneity in extraversion than organizational membership. The hypothesis was not supported, however, for neuroticism and conscientiousness, as the 95 % CIs for ICC(1)s overlapped for organization and occupation.

Understanding Occupational Homogeneity

Hypothesis 5 positions occupations' vocational interests as potential correlates of personality at the occupation level. 107 of the 115 occupations in the current dataset had vocational interest ratings available on O*NET, and the available data (*N* = 21,241) were used for the analysis. We started the analysis with random intercept models for the three outcomes—the estimates based on the smaller sample were nearly identical to those reported in Table 2—and then added the fixed effects of people-things and data-ideas in each model to account for variation associated with occupation (see Table 4). To index effect size, we computed pseudo R^2 as the proportion of variance associated with occupation accounted for by the addition of the fixed effects (see Luo and Kwok 2010). For neuroticism, the people-things and data-ideas did not account for significant variance in personality, pseudo $R^2 = 3\%$. In contrast, the interest dimensions explained significant variance in extraversion (pseudo $R^2 = 32\%$), such that occupations

with high interests on people (and low interests on things) tended to be occupied by more extraverted individuals. Somewhat unexpectedly, data-ideas negatively predicted extraversion, suggesting that occupations emphasizing data but not ideas tended to have extraverted incumbents.² Finally, both people-things and data-ideas predicted conscientiousness, with occupations emphasizing things and data drawing incumbents high on conscientiousness (see Table 4).

Discussion

The current study used a large sample of organizations and varied occupational types and groupings to test the general ASA model and vocational choice theory in tandem. While our findings regarding homogeneity had some similarity to prior research, there were several unique contributions of this work.

First, our estimates of homogeneity were smaller than those found in earlier research on homogeneity (see Ployhart et al. 2006; Satterwhite et al. 2009), presumably due to

² We conducted additional exploratory analyses to understand why the Data-Ideas dimension negatively predicted extraversion at the occupation level. We identified the role of enterprising interests as a plausible post hoc justification. At the occupation level, enterprising interest was positively correlated with extraversion, $r = .54$ and negatively correlated with Data-Ideas, $r = -.68$. It appeared possible that the negative association between Data-Ideas and occupation-level extraversion was driven by enterprising interests. To assess this possibility, we added enterprising interests as a predictor of extraversion, and found that enterprising interests positively predicted extraversion, whereas Data-Ideas became no longer significant (fixed effect = .00, $p = .58$).

Table 3 Variance component and intraclass correlation estimates

| | Neuroticism | Extraversion | Conscientiousness |
|--|-------------|--------------|-------------------|
| Occupation based on minor job groupings (<i>N</i> = 42) | | | |
| Variance components | | | |
| Organization | 0.0008 | 0.0008 | 0.0012 |
| Occupation | 0.0018 | 0.0021 | 0.0013 |
| Organization × occupation | 0.0010 | 0.0007 | 0.0010 |
| Residual | 0.0446 | 0.0390 | 0.0314 |
| ICC(1) | | | |
| Organization | 0.02 | 0.02 | 0.04 |
| Occupation | 0.04 | 0.05 | 0.04 |
| Organization × occupation | 0.02 | 0.02 | 0.03 |
| 95 % CI for ICC(1) based on Markov Chain Monte Carlo | | | |
| Organization <i>LL</i> | 0.01 | 0.01 | 0.02 |
| Organization <i>UL</i> | 0.03 | 0.03 | 0.06 |
| Occupation <i>LL</i> | 0.02 | 0.04 | 0.02 |
| Occupation <i>UL</i> | 0.06 | 0.08 | 0.05 |
| Occupation based on major job groupings (<i>N</i> = 19) | | | |
| Variance components | | | |
| Organization | 0.0008 | 0.0007 | 0.0013 |
| Occupation | 0.0012 | 0.0017 | 0.0014 |
| Organization × occupation | 0.0012 | 0.0010 | 0.0011 |
| Residual | 0.0446 | 0.0390 | 0.0314 |
| ICC(1) | | | |
| Organization | 0.02 | 0.02 | 0.04 |
| Occupation | 0.02 | 0.04 | 0.04 |
| Organization × occupation | 0.02 | 0.02 | 0.03 |
| 95 % CI for ICC(1) based on Markov Chain Monte Carlo | | | |
| Organization <i>LL</i> | 0.01 | 0.01 | 0.02 |
| Organization <i>UL</i> | 0.03 | 0.03 | 0.06 |
| Occupation <i>LL</i> | 0.01 | 0.02 | 0.02 |
| Occupation <i>UL</i> | 0.05 | 0.09 | 0.09 |

N = 23,933 individuals at Level 1

95 % *CI* 95 % confidence interval, *LL(UL)* lower (upper) limit of the 95 % *CI*

the fact that the current sample was much more diverse than prior studies, spanning different industries, multiple organizations, and many occupations. As noted earlier, the lack of diversity in prior studies may have resulted in inflated estimates of homogeneity. Note that we are not concluding that ASA and vocational choice theories lack merit, as our findings do indeed support personality homogeneity at both organizational and occupational levels. Rather, our results point to the need to situate findings regarding homogeneity within a clear understanding of potential sampling biases.

One major concern in the interpretation of ICCs is that, “Despite the widespread use of ICCs in psychology, textbook coverage of them is so limited that procedures for forming inferences about ICCs are seldom mentioned” (McGraw and Wong 1996, p. 31). Thus, we stressed throughout our work that the ICC(1) provides an estimate

of the amount of lower-level variance that can be accounted for by the higher-level entity (Bryk and Raudenbush 1992; Kreft and de Leeuw 1998). It is worth noting that, some widely cited ranges for ICC(1) values were obtained when different *raters within the same unit were rating the same or similar phenomenon* (e.g., climate at the unit level).³ For example, James (1982) reviewed a number of climate and climate-related studies and found that ICC(1) values for perceptual agreement ranged from .00 to .50 and the median value was .12. In contrast, in the study of personality homogeneity, *individuals within the same unit are rating different stimuli* (i.e., their own personality), and the agreement stems from the ASA process as opposed to the higher-level entity influencing individual perceptions. Therefore, it is quite reasonable, in our

³ We would like to thank an anonymous reviewer for this suggestion.

Table 4 Predicting personality traits from occupational interests

| | Neuroticism | | Extraversion | | Conscientiousness | |
|-----------------------------|------------------------|--------------------|------------------------|--------------------|------------------------|--------------------|
| | Random intercept model | Fixed effect model | Random intercept model | Fixed effect model | Random intercept model | Fixed effect model |
| Estimate for fixed effects | | | | | | |
| Intercept | 0.24*** | 0.24*** | 0.65*** | 0.65*** | 0.66*** | 0.66*** |
| People-things | – | 0.00 | – | –0.03*** | – | 0.02*** |
| Data-ideas | – | 0.01 | – | –0.01** | – | –0.02*** |
| Variance for random effects | | | | | | |
| Occupation | 0.0019 | 0.0018 | 0.0025 | 0.0017 | 0.0011 | 0.0006 |
| Organization | 0.0008 | 0.0008 | 0.0008 | 0.0008 | 0.0013 | 0.0013 |
| Org × Occ | 0.0008 | 0.0008 | 0.0006 | 0.0006 | 0.0008 | 0.0008 |
| Residual | 0.0440 | 0.0440 | 0.0384 | 0.0384 | 0.0313 | 0.0313 |
| Pseudo R^2 | – | 3 % | – | 32 % | – | 44 % |

$N = 21,241$ individuals at Level 1 and $N = 107$ occupations at Level 2. Pseudo $R^2 = 1 - \frac{\text{Var}_{\text{occupation for fixed effect model}}}{\text{Var}_{\text{occupation for random intercept}}}$

** $p < .01$; *** $p < .001$

opinion, that estimates for personality homogeneity would fall below the traditional .12 cutoff (*cf* Ployhart et al. 2006; Schneider et al. 1998). Considering the relatively small magnitude of ICC values (i.e., ranging from .02 to .08), we used a Bayesian MCMC algorithm to estimate 95 % confidence intervals surrounding ICC(1) estimates. As Kreft and de Leeuw (1998) note, “the differential effect of the intraclass correlation follows the usual pattern of traditional correlation coefficients: small correlations not significant in small samples are significant in large samples.” Thus, the significant homogeneity that we observed should also be interpreted in light of the large sample size in the current study.

Second, our study results also indicated that occupational groupings are slightly more homogeneous than organizations for some traits but not others. Extraversion showed stronger homogeneity within occupations than within organizations; conscientiousness and neuroticism showed no differences between occupational and organizational homogeneity levels. While some occupations may attract individuals lower in conscientiousness or neuroticism than others, organizational cultures may play a strong role in whether a lack of conscientiousness or being emotionally unstable is tolerated or expressed, regardless of occupation. Further, many organizations may select on conscientiousness for all or most jobs (directly via personality assessments or indirectly in interviews and reference checks), leading to greater homogeneity in organizations on this particular trait. Future research on when and where homogeneity in conscientiousness and neuroticism develops and the role of specific organizational and occupational factors in trait expression more generally could prove useful in

understanding homogeneity processes vis-à-vis specific personality traits.

A third contribution of this study was the finding that vocational interests of an occupation predicted personality at the occupational level. Occupations emphasizing people (vs. things) and data (vs. ideas) were more likely to be occupied by extraverted employees; occupations emphasizing things and data were more likely to be held by conscientious individuals. While individual level relationships between interests and personality are well established, demonstrating links at the occupational level is useful for establishing why personality homogeneity in occupations occurs.

Limitations

Although the current work utilized sophisticated analytic methods and integrated O*NET data with self-reported information, there were some limitations. First, the O*NET database has limitations. For example, there is differential variability within each O*NET occupational group (e.g., some O*NET occupations comprise greater variability on key characteristics such as educational requirements than do other occupations) which may influence personality homogeneity processes observed. However, as the O*NET is the only database that provides this updated classification information, we believe this system provides adequate classification for our research purposes. In addition, there are likely other ways of grouping occupations (e.g., credentialing requirements and salary levels) and organizations (industry) that may affect homogeneity that warrant investigation. In light of this possibility, post hoc analyses

of several organizational characteristics' effects on homogeneity were conducted using publically available organizational data (i.e., industry, organizational size, public vs. private, date of establishment) for a subset of organizations. However, no significant results were found. Second, external forces, such as recessions and job markets, might affect levels of occupational and organizational homogeneity. Comparisons of homogeneity at different points in time would provide useful information.

Implications and Future Research

A number of implications and future research directions can be garnered from this work. In terms of theoretical advancement, this research prompts better theoretical integration of occupational and organizational research. This work also furthers previous discussions of the different means used to assess homogeneity and advocates the use of confidence intervals to present more detailed information concerning observed effect sizes. Finally, this work suggests exploring occupational level factors (e.g., interest profiles) that affect occupational personality homogeneity as well as organizational level factors that affect organizational homogeneity. Investigating which types of organizations and occupations have the greatest homogeneity and which personality traits are most homogeneous at which levels would be a useful addition to current knowledge. This may facilitate the formation of more fine-grained hypotheses concerning which factors are likely to be homogeneous and in which groupings, and inform our understanding of the boundary conditions of the homogeneity hypothesis. Future research could also compare homogeneity between organizational subgroups (e.g., project teams) and organizational levels (e.g., management compared to their followers). Additional examinations that include longitudinal analyses would help in identifying and understanding homogeneity process emergence, causality, and potential mediating mechanisms. In particular, person-vocation fit decisions likely occur for many individuals early in one's life course and may be relatively—although not always—stable, whereas person-organization fit (and specific person-job fit) decisions may be less stable (e.g., a good place for a first job but no room for advancement; shift work that becomes more problematic with changes in family demands). Although previous work has linked homogeneity to outcomes such as job satisfaction and performance (e.g., Ployhart et al. 2006), future work should assess other outcomes associated with this process (e.g., organizational productivity and adaptability). This additional research is potentially informative because it may help to bolster claims concerning the benefits of homogeneity (e.g., facilitate cooperation and retention) and alert

organizational members and leaders of the potential negative effects that could result from homogeneity processes (e.g., reduced innovation and diversity).

In terms of practical implications, these results can inform processes involving (but not limited to) recruitment, selection, placement, and socialization. For example, evaluations of homogeneity on different traits might indicate places where interventions to increase heterogeneity (e.g., in innovation) or to increase homogeneity (e.g., in cooperative tendencies) might be desired. The desire to promote homogeneity, more specifically, may also be informed by recent work highlighting the firm level benefits of such. Oh et al.'s (2015) recent work demonstrated that organization-level mean personality (i.e., neuroticism, extraversion, and conscientiousness) is positively related to managerial job satisfaction and labor productivity. In addition, these authors showed that the positive effects observed were stronger when organization-level variance on these traits is lower, offering additional support for the practical importance of homogeneity.

Findings concerning the presence of homogeneity within organizations and occupations may also inform efforts to promote identification. As identification can be fostered through an emphasis on the distinctiveness of one's group from other groups (e.g., Mael and Ashford 1992) and has been linked to desired outcomes such as effort, participation, and decision-making (e.g., Bartel 2001; Kramer 2006), uncovering and emphasizing the shared personality characteristics and interests within groups may help in fostering identification and subsequently achieving desired outcomes. Further, as this work utilized cross-classified data in which individuals simultaneously belonged to an organization and an occupation and employed analyses that considered both membership categories in tandem, findings could be useful in informing processes for both groups (e.g., can be utilized by organizational leaders or occupational group leaders). Assessing these groups in tandem can also further current knowledge concerning comparative homogeneity (i.e., organizational vs. occupational homogeneity) for different organizational types, such as understanding why organizations less homogeneous in terms of occupations may expect greater heterogeneity than organizations of one occupation type. In addition, our findings uncovering a link between occupational level personality and occupational level interests could inform recruitment and retention decisions. Understanding the relationship between these characteristics can help guide decisions based on which personality traits are desired. For example, organizations seeking a more extraverted workforce in certain job categories should emphasize the 'people' aspects of jobs and ensure the career allows the expression of this interest to retain such individuals.

Finally, there may be important implications in terms of organizational and occupational diversity initiatives from this work. We provided evidence for personality homogeneity within groups and interest as a potential mechanism, and this homogeneity outcome may work against diversity related goals and initiatives. As research has demonstrated demographic differences in interests (e.g., Armstrong et al. 2010; Ryan et al. 1996) and as most organizational efforts concerning diversity target demographic diversity, this work highlights the potential countering effects of the homogeneity cycle on diversity and the outcomes that can occur if direct mechanisms to foster diversity are not put into place. It would be interesting for future work to investigate the relationship between increased occupational and organizational personality and interest homogeneity and subsequent demographic diversity. Further, researchers could examine the outcomes of personality and interest homogeneity to guide organizational decision-making. Overall, gaining information about organizational and occupational homogeneity informs the steps taken to study, apply, facilitate, or reverse homogeneity processes.

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