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Extraversion Advantages at Work: A Quantitative Review and Synthesis of the Meta-Analytic Evidence

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How and to what extent does extraversion relate to work relevant variables across the lifespan? In the most extensive quantitative review to date, we summarize results from 97 published meta-analyses reporting relations of extraversion to 165 distinct work relevant variables, as well as relations of extraversion's lower order traits to 58 variables. We first update all effects using a common set of statistical corrections and, when possible, combine independent estimates using second-order meta-analysis (Schmidt & Oh, 2013). We then organize effects within a framework of four career domains—education, job application, on the job, and career/lifespan—and five conceptual categories: motivations, values, and interests; attitudes and well-being; interpersonal; performance; and counterproductivity. Overall, extraversion shows effects in a desirable direction for 90% of variables (grand mean $\bar{p} = .14$), indicative of a small, persistent advantage at work. Findings also show areas with more substantial effects ($\bar{p} \geq .20$), which we synthesize into four extraversion advantages. These motivational, emotional, interpersonal, and performance advantages offer a concise account of extraversion's relations and a new lens for understanding its effects at work. Our review of the lower order trait evidence reveals diverse relations (e.g., the positive emotions facet has consistently advantageous effects, the sociability facet confers few benefits, the sensation-seeking facet is largely disadvantageous), and extends knowledge about the functioning of extraversion and its advantages. We conclude by discussing potential boundary conditions of findings, contributions and limitations of our review, and new research directions for extraversion at work.

Keywords: extraversion, personality, meta-analysis, second-order meta-analysis, careers

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The function of extraversion in the world of work has attracted substantial attention and controversy in the Western business world. Several books and popular press articles describe the work-related advantages of extraversion. In her *New York Times* best-selling book, *Quiet*, Susan Cain (2013), lamented that extraversion has become a societal ideal in the United States, so much that its converse, introversion, has been relegated to “a second-class trait, somewhere between a disappointment and a pathology” (p. 27). *Bloomberg Businessweek* exhorted readers to “[r]elease your inner extravert” because, “over time, many introverts stagnate in large organizations” (Welch, 2008). An article from the Society for

Human Resource Management urged managers to bring out the best in introverted employees by letting them take breaks from noise, energy, and activity in any office or meeting (RoAne, 2017). In other words, much work treats introversion as a limitation in need of accommodation. Other popular press articles disagree, arguing that introversion can be a competitive advantage (e.g., better listening skills, greater focus) and highlighting the drawbacks of extraversion (e.g., difficulty working alone; Hall, 2016; Laney, 2002; see also, Cain, 2013). In this vein, *Forbes* listed well-known introverts who have achieved career success (Morgan, 2015).

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Amid this debate about the assets and liabilities of extraversion, a key source of answers has been largely neglected: the scholarly literature. This neglect may stem from the immensity of the research record. Extraversion's empirical relations constitute thousands of studies and dozens of meta-analyses, which are scattered across a variety of criterion domains, articles, and journals. Reviews often include multiple trait antecedents simultaneously (e.g., the Big Five) and focus on specific criteria (e.g., job performance), which distributes the attention away from extraversion's unique effects and how they play out across multiple work domains. What is required, then, is a review and synthesis of what we know about extraversion and its advantages in the workplace.

To address this absence, we review extraversion's relations to work variables as reported in existing meta-analyses. To illustrate the vast amount of evidence, we identify meta-analyses reporting relations to 165 variables. We update all estimates using a common set of corrections so that statistical artifacts are treated similarly across contributing reviews. Also, when possible, we combine independent meta-analyses by second-order meta-analysis (Schmidt & Oh, 2013).

Given the large number of variables, we draw on theoretically relevant models discussing personality and career development (Wang & Wanberg, 2017), motivations, values, and interests (Kanfer, Frese, & Johnson, 2017), job attitudes (Judge, Weiss, Kammeyer-Mueller, & Hulin, 2017), job performance (Campbell & Wiernik, 2015), and career success (Ng, Eby, Sorensen, & Feldman, 2005) to introduce an organizing framework for our findings. Specifically, we arrange the variables across four career domains—education, job application, on the job, and career/lifespan—and five conceptual categories: motivations, values, and interests; attitudes and well-being; interpersonal; performance; and counterproductivity. The online supplemental material (see Table S1) presents descriptions and sources for all variables reviewed, which are organized in this framework. Drawing on this rich repository of evidence, we seek to answer three research questions: To what extent is extraversion an advantage at work? What are its effect sizes? And in which areas does it confer its greatest advantages? When available, we also review relations of extraversion's lower order traits, which involves relations to 58 variables. We examine how the lower order traits contribute to extraversion's advantages or show unique effects of their own.

This article makes three important contributions to the literature. First, the comprehensive nature of our quantitative review provides previously unavailable insight into the scope and sizes of extraversion's effects for myriad work variables. By organizing effects across career domains (education, job application, on the job, and career/lifespan) and major categories of variables (motivations, values, and interests; attitudes and well-being; interpersonal; performance; and counterproductivity), our review reveals the extent of extraversion's advantageous effects: The trait relates in a desirable direction to 90% of variables, which represents a degree of consistency not previously documented. We also develop an empirical distribution of extraversion's effects (grand mean: $\bar{\rho} = .14$, $SD = .12$), which suggests that it confers a small, yet pervasive advantage across domains and over the lifespan. By offering a robust delineation of the breadth and role of extraversion's work relations, we present scholars with a rich summary of valuable information. Second, we draw on theory and evidence from the top tercile of its effect sizes to synthesize four advantages of extra-

version at work: (a) *motivational* (i.e., approach motivation), (b) *emotional* (i.e., more positive emotions), (c) *interpersonal* (i.e., greater social and leadership skill), and (d) *performance* (i.e., higher levels of performance, proactivity, and being rewarded). Advantages extend the literature by both providing a deep synthesized account of the existing evidence and offering a new lens for understanding the effects of extraversion at work. Finally, we describe a hierarchical model of extraversion's lower order traits and review their existing relations. The findings indicate great diversity and utility among these traits (e.g., the positive emotions facet is consistently advantageous, the sociability facet has limited benefits, and the sensation-seeking facet may be something of a disadvantage) and shine additional light on the roles that they play in extraversion's advantages at work. Altogether, this article advances science by presenting a deeper, richer, and fuller understanding of extraversion at work than was previously available. Accordingly, it acts as a touchstone in the literature and a springboard to propel future research. In the next section, we provide an overview of extraversion and a model of its lower order traits.

Extraversion

Conceptual and Theoretical Underpinnings

Individual differences in talkativeness, sociability, dominance, excitement seeking, and positive emotions have been the subject of popular fascination and scholarly study for millennia. More recently, these behavioral patterns have been organized under the heading of introversion–extraversion (Eysenck, 1973; Jung, 1921/1971), to which we refer via the shorthand label *extraversion*. The prototypical extravert is talkative, gregarious, prefers taking charge, expresses positive emotion, and enjoys stimulating activities. In contrast, the prototypical introvert is quiet, emotionally reserved, less energetic, and harder to get to know (John, Naumann, & Soto, 2008).

Extraversion is central to all major theories and descriptive models of personality traits (Cloninger, 1987; Costa & McCrae, 1992; Digman, 1990; Eysenck & Eysenck, 1975; Tellegen & Waller, 2008). Notwithstanding the competing models and measures, evidence indicates that extraversion scores correlate moderately across testing occasions (test–retest $\bar{r} = .55$; Roberts & DelVecchio, 2000) and measures ($\bar{r} = .56$; Pace & Brannick, 2010) to tap a common underlying construct (van den Berg et al., 2014). Although its genetic underpinnings are complex (van den Berg et al., 2016), extraversion is heritable ($M = .41$; range = .36 to .51; Vukasović & Bratko, 2015) and follows a genetic trajectory of gradual increase in adolescence, which then stabilizes in adulthood (Briley & Tucker-Drob, 2014; Roberts, Walton, & Viechtbauer, 2006). Concerning its neurobiology, extraversion is linked to regions of the brain implicated in reward sensitivity, the behavioral activation system, and positive emotions (Depue & Collins, 1999; Eysenck, 1973; Gray & McNaughton, 2000). From an agentic viewpoint, extraversion helps facilitate attainment of individuals' specific goals (McCabe & Fleeson, 2012) and more generalized strivings toward higher order goals of status, power, and self-enhancement (Barrick, Mount, & Li, 2013).

Putting it together, the scientific literature suggests that individuals higher in extraversion are genetically and biologically predisposed to be more sensitive to and motivated by rewards in work

contexts, especially rewards associated with status. Further, because these tendencies are relatively stable throughout working adulthood, they have major implications across the lifespan.

Hierarchical and Multidimensional Structure

Emerging evidence indicates that personality can be modeled using a general framework, which is hierarchically organized and lacks simple structure (Markon, Krueger, & Watson, 2005). As one of the Big Five, extraversion is aptly conceptualized as a *general factor*, which means it is composed of the covariance of its associated characteristics of sociability, dominance, activity, and so on (Edwards, 2001). Popular discussion and the preponderance of prior work, particularly in industrial-organizational psychology, conceive of extraversion as unidimensional. Yet, a growing body of evidence shows the value of modeling it as a hierarchical and multidimensional construct (e.g., Judge, Rodell, Klinger, Simon, & Crawford, 2013; Seltzer, Ones, & Tatar, 2017).

An extensive meta-analysis of extant scales of lower order traits shows that extraversion has a hierarchical structure of two trait levels: meso-level aspects (DeYoung, Quilty, & Peterson, 2007) and micro-level facets (Davies, 2012; Figure S1). The *assertiveness* aspect includes two facets: *dominance* (also labeled *potency* [e.g., Tellegen & Waller, 2008] or assertiveness [e.g., Costa & McCrae, 1992]) and *activity* (*energy level*; Watson & Clark, 1997). It reflects motivation for social status and leadership, and is theoretically linked to incentive reward sensitivity, which refers to a wanting for and drive toward desired objectives (DeYoung, 2015). It is also primarily responsible for extraversion's effects pertaining to behavioral activation (DeYoung, 2013). The *enthusiasm* aspect likewise includes two facets: *sociability* (also labeled *affiliation* [e.g., Hough, 1992] or *gregariousness* [e.g., Costa & McCrae, 1992]) and *positive emotions* (or *positive affect*; Watson & Clark, 1997). Enthusiasm combines the benefits of tendencies for gregarious social interaction with effects of frequent experiences of activated positive affect. It shows theoretical linkages to consummatory reward sensitivity, which refers to actual or imagined enjoyment that comes with attaining a goal (DeYoung, 2015). Existing neuroscientific evidence suggests that the two aspects have distinct neurobiological bases in dopamine (i.e., assertiveness) and endogenous opiates (i.e., enthusiasm; Depue & Morrone-Strupinsky, 2005; DeYoung, 2013), which helps to partly explain their functions and discriminant relations. Finally, *sensation-seeking* (or *fun seeking*; Carver & White, 1994) refers to tendencies to seek exciting, new, or stimulating experience, and is linked to hedonic reward sensitivity (Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993). It is unique, not only because of its status as a stand-alone marker of extraversion, but because it can show stronger relations to certain impulsivity traits than it does with its fellow extraversion facets (Sharma, Markon, & Clark, 2014). Thus, this hierarchical model is comprised of seven lower order traits.¹

A Quantitative Review and Synthesis of the Meta-Analytic Evidence

Extraversion has been studied extensively as a predictor and correlate of important work criteria. Despite its inclusion in scores of meta-analyses, a comprehensive review of the evidence has

never been conducted. Drawing on findings from 97 published meta-analyses identified and retained using the approaches detailed subsequently answer the following questions: To what extent is extraversion an advantage at work? What are its effect sizes and for which areas does it display the strongest effects? Finally, how do lower order traits contribute to extraversion's advantages?

Method

Literature Search

We used four search strategies to locate extraversion meta-analyses appearing between January 1990 and January 1, 2019. We used the following search string in (a) PsycINFO [(metaanaly* OR quantitative review OR systematic review).m_titl. AND (personality OR trait OR temperament OR (five-factor model) OR FFM OR (Big Five) OR extraversion OR openness OR agreeableness OR conscientiousness OR (emotional stability) OR neuroticism).mp] and (b) a parallel string in Web of Science, (c) gathered studies from reference sections of reviews of Big Five meta-analyses (i.e., Barrick, Mount, & Judge, 2001; Borghans, Duckworth, Heckman, & ter Weel, 2008; Brandstatter, 2011; Connelly, Ones, & Chernyshenko, 2014; Judge, Klinger, Simon, & Yang, 2008; Ones, Dilchert, Viswesvaran, & Judge, 2007; Ones, Viswesvaran, & Dilchert, 2005; Ozer & Benet-Martínez, 2006; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007; Schmidt, Shaffer, & Oh, 2008; Wilmot, 2017), and (d) conducted manual searches, on January 1, 2019 for in-press articles in outlets that publish work meta-analyses (i.e., *European Journal of Personality*, *European Journal of Work and Organizational Psychology*, *Human Performance*, *International Journal of Selection and Assessment*, *Journal of Applied Psychology*, *Journal of Management*, *Journal of Occupational and Organizational Psychology*, *Journal of Personality and Social Psychology*, *Journal of Research in Personality*, *Journal of Vocational Behavior*, *Personality and Individual Differences*, *Personality and Social Psychology Review*, *Personnel Psychology*, *Psychological Bulletin*). The total number of records identified through electronic searches was 5,482. An additional 43 were gathered from reference sections and in-press articles. After removing duplicates, 2,213 records remained eligible for initial screening.

Article Inclusion Criteria

A record had to meet four criteria to be included in the final database. Specifically, it had to be (a) a meta-analysis (i.e., primary studies excluded); (b) published (i.e., unpublished theses, dissertations, and conference papers excluded); (c) in the English language; (d) that reported the zero-order relation of extraversion to at least one work relevant variable. After initial screening, 1,692

¹ Dominance, activity, sensation-seeking, sociability, and positive emotions map onto five of six facet scales of extraversion in the Revised NEO Personality Inventory (Costa & McCrae, 1992). The sixth facet, warmth, blends equal variance from extraversion and agreeableness factors (De Young, Weisberg, Quilty, & Peterson, 2013; Woods & Anderson, 2016). Because we focus on facets that are predominantly influenced by extraversion, we excluded warmth. Table S2 in the online supplemental material presents details for all meta-analyses coded for inclusion in our review of the lower order traits.

records were excluded because they were not meta-analyses, they did not report a relation to extraversion, or both. Next, 47 unpublished records were excluded, as well as 23 non-English publications. Finally, 313 records were excluded because they did not report a relation to a work relevant variable. Thus, after screening, 138 meta-analyses were included in the final database.

Meta-Analytic Database

All meta-analytic data were systematically extracted, including the name, source, and description of the focal variable, its total number of independent samples (i.e., k), total sample size (i.e., N), mean sample-size weighted observed effect size (e.g., \bar{r} , \bar{d} , or \bar{z}), and an index of between-studies variability (e.g., standard error, standard deviation, confidence and/or credibility intervals). Select meta-analyses (i.e., Conway, Lombardo, & Sanders, 2001; Hogan & Holland, 2003; Hough, 1992; Huang, Ryan, Zabel, & Palmer, 2014) reported results for lower order traits of extraversion, which correspond to trait taxonomies that are similar to, but not identical with, the Big Five. In such cases, we used composites to estimate extraversion-level effects (Ghiselli, Campbell, & Zedeck, 1981). Likewise, composites were formed to estimate aspect-level effects from facet-level meta-analyses (e.g., Judge et al., 2013; Jones, Miller, & Lynam, 2011; Seltzer et al., 2017; Steel, Schmidt, & Shultz, 2008). Information about the reliability of a predictor and/or a criterion measure was also coded or estimated. A doctoral student with training in personality and meta-analysis extracted basic descriptive information. The first author compared extracted data to the published articles and made corrections as needed. Technical details about composite formation and other methodological procedures are presented in the online supplemental material.

Variables were also coded according to the type of scale used to measure extraversion (i.e., indirect vs. direct measures; cf. Hurtz & Donovan, 2000), the research context (i.e., general vs. workplace settings), and the criterion-rating source (i.e., self-, informant-, mixed-ratings). For other-rated criteria, the type of relationship was also noted (e.g., supervisor, peer, subordinate). A final code was made indicating whether a variable was included in multiple meta-analyses. Although the effects for most variables were reported in only one meta-analysis, several (e.g., job performance) were included in multiple meta-analyses. To determine if these meta-analyses shared overlapping constituent studies, we scrutinized their Method and Reference sections. Meta-analyses that were explicitly updates of prior reviews, or had overlapping primary studies, were marked accordingly, but meta-analyses with evidence of nonredundancy were duly noted.

Variable Inclusion Criteria

A total of 733 work variables reporting effects across 138 meta-analyses were extracted and coded. To be included in our review, a variable had to meet six criteria. Specifically, it had to (a) have sufficient data for analysis (i.e., N , k , \bar{r} reported), (b) use self-reports of extraversion (i.e., other- or mixed-ratings excluded), (c) relate to a consequential educational or work variable (cf. Ozer & Benet-Martínez, 2006; i.e., nonwork variables [e.g., demographics, cognitive ability, or clinical diagnoses] excluded), (d) permit its inferences to the general working population (i.e., job-specific

studies excluded), (e) come from an independent meta-analysis (i.e., only one effect per variable included), and (f) meet a minimum threshold for robustness (i.e., $k \geq 4$ and/or $N \geq 2,000$). Variables were dropped following their first missed criterion for inclusion. For variables with multiple effects, the effect from the newer or more comprehensive meta-analysis was used. Variables with effects from multiple independent meta-analyses were combined by second-order meta-analysis (Schmidt & Oh, 2013). Finally, we note that 16 variables qualified for all inclusion criteria, except for the minimum threshold for robustness. We decided to retain four of them. We kept two education variables (i.e., study attitudes, academic satisfaction) because of the paucity of variables in that domain, and two job application variables (i.e., assessment center exercise: oral presentation, employment quality), which are part of larger sets of variables that otherwise met criteria. Although we excluded the remaining 12 variables, we report their results in Table S3 in the online supplemental material. In the end, 165 variables reported in 91 meta-analyses met our criteria for inclusion.

To be included in our review of lower order traits, a variable had to meet the same above inclusion criteria, except for a few modifications. Specifically, self-reports of at least one aspect (assertiveness, enthusiasm) or facet (dominance, activity, sociability, positive emotions, or sensation-seeking) shown in Figure S1 in the online supplemental material was used. To accommodate comparatively fewer meta-analyses, the minimum robustness threshold requirement was slightly reduced (i.e., $k \geq 3$ and/or $N \geq 500$). Two final criteria were also added. To facilitate comparability of findings, lower order trait relations (g) had to come from a meta-analysis reporting extraversion-level effects and (h) be to one of the 165 qualifying variables. For variables reporting multiple effects, the effect from the newer or more comprehensive study was selected, and independent effects were combined by second-order meta-analysis. In the end, 58 variables reported in 30 meta-analyses met criteria.²

In sum, out of 138 qualifying meta-analyses, 67 reported effects that were included in the extraversion review only, 24 reported effects that were included in reviews of both extraversion and its lower order traits, and six reported effect sizes that were included in the lower order trait review only (total = 97). The remaining 41 meta-analyses failed to meet criteria, or were older or less comprehensive, than those included in second-order review. For the full list, see the Reference section.

² Despite their extraversion-level effects being excluded, several meta-analyses reported lower order trait relations that qualified for inclusion. For the on the job domain, variables and associated sources included: demonstrating effort (Hough, 1992), job satisfaction and turnover intentions (Thoresen, Kaplan, Barsky, Warren, & de Chermont, 2003), burnout (Alarcon, Eschleman, & Bowling, 2009), and organizational citizenship behavior and withdrawal behavior (Kaplan, Bradley, Luchman, & Haynes, 2009). For the career/lifespan domain, variables and associated sources included: workaholism (Clark, Michel, Zhdanova, Pui, & Baltes, 2016), leadership (Joseph, Dhanani, Shen, McHugh, & McCord, 2015), leadership emergence (Do & Minbashian, 2014; Joseph, Dhanani et al., 2015), leadership effectiveness (Do & Minbashian, 2014; Hoffman et al., 2011; Joseph, Dhanani, et al., 2015), transformational leadership (Do & Minbashian, 2014; Joseph, Dhanani, et al., 2015), and transactional leadership (Joseph, Dhanani, et al., 2015). Sources for all other lower trait relations correspond to the references listed in Table S1 in the online supplemental material.

Meta-Analytic Procedures

No new meta-analyses were conducted in this study. Instead, procedures from Hunter and Schmidt's (2014) psychometric meta-analysis were used to update estimates from meta-analyses included in our review using a common set of statistical corrections. Our goal was that statistical artifacts be similarly addressed across all contributing records. To correct for measurement error, frequency-weighted artifact distributions were developed from data in their source meta-analysis or from other sources in the literature (e.g., Wilmot, Wiernik, & Kostal, 2014). Distributions and their sources are reported in the Appendix of the online supplemental material. To correct for error in measuring extraversion, we used the internal consistency reliability reported by Davies, Connelly, Ones, and Birkland (2015). To correct for error in lower order traits, we used reliabilities from Judge et al. (2013). Internal consistencies were used to correct for error in self-report or objective criteria, but interrater reliabilities were used for correcting other-rated variables (Schmidt, Viswesvaran, & Ones, 2000). Finally, because of sporadic reporting, we did not correct for range restriction.

First-order meta-analyses. All meta-analyses included in our review had a common set of statistics. First, the descriptive statistics (i.e., k , N , mean sample-size weighted observed \bar{r} , and its standard deviation, SD_r), which are reported in, or estimated from, their source meta-analysis. Next, we used Hunter-Schmidt procedures to estimate the variance attributable to sampling and measurement error, which were subtracted from the observed variance. The observed correlation was also corrected for attenuation due to measurement error. Corrections were used to estimate the mean population correlation ($\bar{\rho}$) and its associated standard deviation (SD_{ρ}). Although \bar{r} and $\bar{\rho}$ are both parameter estimates, the latter is corrected for statistical artifacts, but the former is not. Finally, around these parameters, we calculated confidence and credibility intervals. Confidence intervals (CI) estimate the boundaries in which the observed correlation is expected to fall based on the standard error of between-study effects. In contrast, credibility intervals (CR) estimate the between-studies heterogeneity in population effects and are calculated using SD_{ρ} . CIs involve estimates of observed effects and tend to be smaller given larger pooled samples, whereas CRs bound "true" effect distributions and may be larger, or smaller, depending on generalizability.

Second-order meta-analyses. Certain meta-analyses reported results from multiple, nonoverlapping meta-analyses, which were combined using second-order meta-analysis procedures. Second-order meta-analysis uses basic descriptives (i.e., k , N , \bar{r} , and SD_r) and mean population correlations ($\bar{\rho}$) from two or more first-order meta-analyses. All second-order meta-analyses had a common set of statistics. First, m reports the number of contributing first-order meta-analyses. Second-order sampling error was estimated for each first-order meta-analytic effect (i.e., VAR_2). Next, the grand mean second-order population effect (i.e., $\bar{\rho}_M$) was estimated, as well as a set of three variance components: (a) VAR_{2M} , which is the mean variance of first-order meta-analyses corrected for sampling and measurement error; (b) VAR_{2SE} , which is the variance due to second-order sampling error; and (c) VAR_{True} , which is the difference between the prior two components. When VAR_{True} is zero or negative, this suggests that all remaining variance from first-order

meta-analysis is accounted for by second-order sampling error (Schmidt & Oh, 2013).

Second-order meta-analyses for extraversion were conducted for three education, nine job application, 12 on the job, and 14 career/lifespan variables (see final column in Table S1 of the online supplemental material). For lower order traits, second-order meta-analyses were run for two job and one career/lifespan variables. We detail all output, including sources for and statistics from contributing first-order meta-analyses in Tables S4 to S8 of the online supplemental material, but we report parameter estimates (i.e., $\bar{\rho}_M$, SD_{ρ}) in the Results section.

Organizational Framework for Qualifying Variables

To manage the reporting of our vast findings, we organized the qualifying variables into a framework of four career domains—education, job application, on the job, career/lifespan—and five conceptual categories, which are based on descriptions we adapted from the literature: (a) motivations, values, and interests (i.e., internal forces that influence the direction, intensity, and persistence of individuals' work relevant affect, cognitions, and/or behavior; Kanfer et al., 2017); (b) attitudes and well-being (i.e., individuals' emotional and cognitive evaluations of work phenomena, and its influence on their psychological well-being; Judge et al., 2017); (c) interpersonal (i.e., individual behaviors involving interpersonal interaction with or influence of others to seek work goals, as well as outcomes of successful interaction or influence; Campbell, 2013); (d) performance (i.e., individual behaviors that contribute to work goals and outcomes of successful goal contribution; Campbell & Wiernik, 2015); and (e) counterproductivity (i.e., individual behaviors reflecting social or moral impairment that detract from relevant work goals, as well as outcomes of misbehavior; Ones & Dilchert, 2013; see Table S1 in the online supplemental material for further details).

Results

Tables 1 through 4 present extraversion's relations in our organizing framework. To compute descriptive statistics for each career domain, we rekeyed relations for variables with a negative (e.g., counterproductive work behavior) or a neutral valence (e.g., personal values) in a positive direction. Given the large quantity of findings, we highlight variables in the top tercile of effects (i.e., $\bar{\rho} \geq .20$) and primarily focus our reporting on these more substantial extraversion relations.

Extraversion

Education. Table 1 shows meta-analyses of extraversion to variables relevant to Education. Overall, extraversion has population correlations in a desirable direction for 15 out of 21 variables (71%). The grand mean effect for the domain is $\bar{\rho}_M = .09$ ($SD = .15$). We highlight five relations in the top tercile: the two goal-orientation variables of learning ($\bar{\rho} = .30$) and performance avoidance ($\bar{r} = -.31$), and three variables that reflect successful adjustment to college: overall adjustment ($\bar{\rho} = .25$), social adjustment ($\bar{\rho} = .33$), and institutional attachment ($\bar{\rho} = .27$). The former two relations are in the motivations, values, and interests category, and the latter three are in the attitudes and well-being

Table 1
Meta-Analyses of Extraversion and Education Variables

Variable	<i>m</i>	<i>k</i>	<i>N</i>	\bar{r}	<i>SD_r</i>	$\bar{\rho}$	<i>SD_ρ</i>	95% CI		80% CR		
								LO	HI	LO	HI	
Motivations, values, and interests												
Goal orientation												
Learning	1	12	3,215	.24	.05	.30	.00	.21	.27	.30	.30	
Performance avoidance	1	5	1,404	-.24	.06	-.31	.00	-.29	-.19	-.31	-.31	
Performance prove	1	11	2,776	.03	.06	.04	.00	-.01	.07	.04	.04	
Academic self-efficacy	1	5	875	.14	.10	.18	.08	.05	.23	.07	.29	
Academic procrastination	1	13	4,424	.04	.09	.05	.08	-.01	.09	-.06	.16	
Attitudes and well-being												
Adjustment to college												
Overall	1	7	1,188	.22	.17	.25	.18	.09	.35	.02	.48	
Academic	1	6	975	.12	.09	.14	.05	.05	.19	.08	.20	
Social	1	6	975	.27	.21	.33	.24	.10	.44	.03	.63	
Personal emotional	1	6	981	.10	.17	.12	.18	-.03	.23	-.11	.35	
Institutional attachment	1	5	894	.22	.16	.27	.18	.08	.36	.04	.50	
Study attitudes	1	3	881	-.14	.03	-.17	.00	-.17	-.11	-.17	-.17	
Academic satisfaction	1	4	660	.07	.17	.09	.19	-.10	.24	-.16	.33	
Career decision-making difficulties	1	20	8,463	-.13	.12	-.15	.13	-.18	-.08	-.31	.01	
Performance												
Study habits	1	6	1,429	-.11	.09	-.14	.08	-.18	-.04	-.23	-.04	
Academic attendance	1	8	2,144	-.09	.08	-.10	.05	-.14	-.04	-.17	-.03	
Academic performance	1	113	59,986	-.01	.21	-.01	.26	-.05	.03	-.34	.31	
Academic performance: Postsecondary	5	87	32,969	-.04	.10	-.05	.03	-.07	-.02	-.09	-.01	
Academic success	1	69	33,005	.09 ^a	.05 ^b	.11	.00	.08	.10	.11	.11	
Training performance	3	42	8,892	.05	.09	.07	.05	.02	.08	.01	.13	
Training success	2	73	8,607	.07	.09	.09	.00	.05	.09	.09	.09	
Counterproductivity												
Academic dishonesty	1	13	4,424	.04	.09	.05	.09	-.01	.09	-.06	.16	

Note. Values in the top 33% of effect sizes (i.e., $\bar{\rho} \geq .20$) are presented in italic type. *m* = total number of independent meta-analyses; *k* = number of independent samples; *N* = total sample size; \bar{r} = *M* sample-size weighted observed correlation; *SD_r* = *M* observed standard deviation; $\bar{\rho}$ = estimated population correlation corrected for unreliability; *SD_ρ* = standard deviation of population correlation; 95% CI = 95% confidence interval around observed correlation; 80% CR = 80% credibility interval around population correlation.

^a Mean sample-size weighted observed correlation is a composite. ^b *SD_r* was neither reported nor calculable from the source meta-analysis; thus, an estimate of variance due to sampling error is reported instead.

category. In all cases, higher extraversion is associated with greater advantage.

Job application. Table 2 reports meta-analyses of extraversion to job application variables. Extraversion has relations in a consistently desirable direction for 21 of 23 variables (91%). The grand mean effect for the domain is $\bar{\rho}_M = .12$ (*SD* = .08). We highlight three relations in the top tercile. From the motivations, values, and interests category, assessment center ratings of drive ($\bar{\rho} = .31$) has a substantial effect. Interpersonal category relations for performance in conventional/low structure employment interviews ($\bar{\rho} = .23$) and the assessment center dimension of influencing others ($\bar{\rho} = .20$) are also substantial. In all cases, higher extraversion is associated with greater advantage.

On the job. Table 3 presents meta-analyses of extraversion to on the job variables. Extraversion has relations in a consistently desirable direction for 61 out of 67 variables (91%). The grand mean effect for the domain is $\bar{\rho}_M = .15$ (*SD* = .11) and 24 relations are in the top tercile. Seven effects come from the motivations, values, and interests category: regulatory focus promotion ($\bar{\rho} = .38$), self-efficacy ($\bar{\rho} = .31$), demonstrating effort ($\bar{\rho} = .21$), and overall employee engagement ($\bar{\rho} = .38$), along with its absorption ($\bar{\rho} = .25$), dedication ($\bar{\rho} = .29$), and vigor ($\bar{\rho} = .34$) components. In the attitudes and well-being category, 11 variables are in the top tercile, including overall

job satisfaction ($\bar{\rho} = .22$), global ($\bar{\rho} = .28$), affective ($\bar{\rho} = .28$), and normative ($\bar{\rho} = .21$) organizational commitment, and positive work–nonwork spillover ($\bar{\rho} = .29$). Expatriate adjustment variables are also in the top tercile of effects, including overall adjustment ($\bar{\rho} = .30$) and its general ($\bar{\rho} = .27$), interactional ($\bar{\rho} = .24$), and work ($\bar{\rho} = .26$) components. Finally, the depersonalization ($\bar{\rho} = -.24$) and personal accomplishment ($\bar{\rho} = .28$) components of burnout are also in the top 33% of effects. Five performance category effects are also substantial: overall job performance as rated by peers ($\bar{\rho} = .27$) and the self ($\bar{\rho} = .28$), contextual performance ($\bar{\rho} = .25$), change-oriented behavior ($\bar{\rho} = .24$), and voice ($\bar{\rho} = .22$). Withdrawal behavior ($\bar{\rho} = -.20$) is the lone top tercile effect size in the counterproductivity category. In all cases, higher levels of extraversion are associated with more advantageous effects. Finally, the relation to supervisor-ratings of overall job performance merits mention. Although it falls short of the top tercile of effects, second-order meta-analysis (*m* = 11) nevertheless reveals a positive, generalizable relation ($\bar{\rho} = .18$) to this important work variable.

Career/lifespan. Table 4 reports meta-analyses of extraversion to variables relevant across the career and lifespan. Extraversion shows relations in a consistently desirable direction for 51 of 54 variables (94%). The grand mean effect for the domain is $\bar{\rho}_M = .16$ (*SD* = .13) and 21 effects are in the top tercile. Nine

Table 2
Meta-Analyses of Extraversion and Job Application Variables

Variable	<i>m</i>	<i>k</i>	<i>N</i>	\bar{r}	<i>SD_r</i>	$\bar{\rho}$	<i>SD_ρ</i>	95% CI		80% CR		
								LO	HI	LO	HI	
Motivations, values, and interests												
Job search self-regulation	1	5	2,171	.16	.11	.19	.12	.06	.26	.04	.35	
Assessment center dimension: Drive	2	11	6,149	.26	.15	.31	.08	.17	.35	.21	.42	
Attitudes and well-being												
Applicant attraction to organizations	1	14	5,108	.11	.11	.13	.12	.05	.17	-.02	.29	
Assessment center dimension: Stress tolerance	2	11	6,060	.16	.06	.19	.08	.12	.19	.09	.29	
Interpersonal												
Employment interview												
Conventional/low structure	1	19	2,301	.16	.12	.23	.11	.11	.21	.09	.37	
Behavioral/high structure	2	11	1,375	.09	.06	.11	.00	.05	.13	.11	.11	
Negotiation performance	2	12	977	.13	.15	.18	.00	.05	.21	.18	.18	
Assessment center dimension												
Communication	2	11	6,097	.09	.09	.11	.01	.04	.14	.09	.13	
Consideration of others	2	11	6,011	.09	.12	.11	.00	.02	.16	.11	.11	
Influencing others	2	13	6,830	.17	.13	.20	.00	.10	.24	.20	.20	
Assessment center exercise												
Leaderless group discussion	1	13	3,105	.13	.11	.15	.10	.07	.19	.03	.28	
Oral presentation	1	3	602	.13	.10	.15	.08	.02	.24	.05	.25	
Roleplay	1	5	1,413	.10	.07	.12	.05	.04	.16	.06	.18	
Performance												
Situational judgment tests												
Knowledge	1	14	9,533	.14	.08	.16	.08	.10	.18	.06	.26	
Behavioral tendency	1	11	1,818	.07	.13	.08	.12	-.01	.15	-.07	.23	
Job search success												
Job search intensity	1	21	15,885	.05	.10	.06	.11	.01	.09	-.08	.20	
Employment status	1	5	6,770	.05	.03	.06	.00	.03	.07	.06	.06	
Employment quality	1	3	816	.02	.08	.02	.05	-.06	.10	-.04	.09	
Assessment center dimension												
Organizing and planning	2	12	6,370	.10	.06	.12	.02	.07	.14	.10	.14	
Problem solving	2	12	6,214	.09	.06	.10	.00	.05	.12	.10	.10	
Assessment center exercise												
Case analysis	1	3	358	-.03	.10	-.04	.06	-.15	.09	-.11	.04	
In-basket	1	7	1,067	.06	.09	.07	.05	-.01	.13	.01	.14	
Counterproductivity												
Applicant faking	1	29	71,841	.05	.05	.06	.05	.03	.07	-.01	.12	

Note. Values in the top 33% of effect sizes (i.e., $\bar{\rho} \geq .20$) are presented in italic type. *m* = total number of independent meta-analyses; *k* = number of independent samples; *N* = total sample size; \bar{r} = *M* sample-size weighted observed correlation; *SD_r* = *M* observed standard deviation; $\bar{\rho}$ = estimated population correlation corrected for unreliability; *SD_ρ* = standard deviation of population correlation; 95% CI = 95% confidence interval around observed correlation; 80% CR = 80% credibility interval around population correlation.

variables in the motivations, values, and interests category are in the top 33%: the metavalues of self-enhancement ($\bar{\rho} = .28$) and its constituent personal values of achievement ($\bar{\rho} = .30$), hedonism ($\bar{\rho} = .21$), and power ($\bar{\rho} = .31$); the metavalues of openness to change ($\bar{\rho} = .28$) and its subordinate value of stimulation ($\bar{\rho} = .37$); and tradition values ($\bar{\rho} = -.26$). Enterprising ($\bar{\rho} = .44$) and social ($\bar{\rho} = .33$) vocational interests effects are also sizable. Regarding attitudes and well-being, career adaptability ($\bar{\rho} = .36$), career satisfaction ($\bar{\rho} = .24$), happiness ($\bar{\rho} = .47$), and life satisfaction ($\bar{\rho} = .26$) are in the top tercile. The interpersonal category variables of emotional expressiveness ($\bar{\rho} = .26$) and six leadership variables have substantial effects: overall leadership ($\bar{\rho} = .30$), its emergence ($\bar{\rho} = .24$) and effectiveness ($\bar{\rho} = .34$) components; and transformational leadership ($\bar{\rho} = .28$), with its components of charisma ($\bar{\rho} = .25$) and intellectual stimulation ($\bar{\rho} = .21$). In the category of performance, the effect for job crafting ($\bar{\rho} = .24$) is also in the top tercile. Again, across cases, higher extraversion levels are associated with more advantageous effects. Finally, rela-

tions to variables reflecting receiving rewards deserve some attention. Although they are not in the top tercile, nevertheless, extraversion shows positive relations to reward outcomes of written commendations ($\bar{\rho} = .12$), promotions ($\bar{\rho} = .18$), and earning a higher salary ($\bar{\rho} = .12$).

Summary. Table 5 synthesizes extraversion's effects across all 165 variables. Its effects range from $\bar{\rho} = -.17$ to .47, with an overall grand mean of $\bar{\rho}_M = .14$ (*SD* = .12). Values at the first ($\bar{\rho} = .07$), median ($\bar{\rho} = .12$), and third quartiles ($\bar{\rho} = .24$) enumerate the pattern of extraversion's advantage at work. Breaking out its effects by category, motivations, values, and interests ($\bar{\rho}_M = .20$, *SD* = .12), attitudes and well-being ($\bar{\rho}_M = .18$, *SD* = .12), and Interpersonal ($\bar{\rho}_M = .17$, *SD* = .08) categories show moderate effects. The magnitude of the Interpersonal effect is particularly notable because most of its variables use other-ratings. Finally, the mean performance effect is small ($\bar{\rho}_M = .10$, *SD* = .09) and the counterproductivity category mean is nil ($\bar{\rho}_M = .00$, *SD* = .10). The final row reports absolute values for all effects ($|\bar{\rho}_M| = .16$, *SD* = .10). Esti-

Table 3
Meta-Analyses of Extraversion and On the Job Variables

Variable	<i>m</i>	<i>k</i>	<i>N</i>	\bar{r}	<i>SD_r</i>	$\bar{\rho}$	<i>SD_ρ</i>	95% CI		80% CR	
								LO	HI	LO	HI
Motivations, values, and interests											
Regulatory focus											
Prevention	1	10	2,697	-.03	.16	-.04	.18	-.13	.07	-.27	.20
Promotion	1	10	2,697	.30	.06	.38	.00	.27	.34	.38	.38
Performance motivation											
Expectancy	1	6	663	.07	.10	.10	.00	-.01	.15	.10	.10
Goal-setting	1	5	498	.13	.10	.16	.01	.04	.22	.15	.17
Self-efficacy	1	7	2,067	.24	.14	.31	.16	.14	.34	.10	.52
Demonstrating effort	1	10	12,021	.14	.08	.21	.11	.09	.19	.07	.35
Employee engagement											
Overall	1	44	20,471	.32	.12	.38	.13	.28	.36	.21	.55
Absorption	1	19	5,791	.21	.09	.25	.08	.17	.25	.14	.35
Dedication	1	20	6,363	.25	.12	.29	.13	.20	.30	.13	.46
Vigor	1	20	6,362	.29	.12	.34	.13	.24	.34	.18	.50
Attitudes and well-being											
Job satisfaction											
Overall	2	96	21,802	.19	.13	.22	.00	.17	.22	.22	.22
Coworkers	1	12	2,230	.07	.12	.08	.12	.001	.14	-.07	.24
Pay	1	11	2,066	.01	.11	.01	.10	-.06	.08	-.12	.14
Promotion	1	5	498	.09	.17	.11	.16	-.06	.24	-.10	.31
Supervision	1	13	3,085	.04	.08	.05	.05	.00	.08	-.02	.11
Work itself	1	11	1,923	.09	.14	.11	.14	.01	.17	-.07	.29
Organizational commitment											
Global	1	11	4,835	.23	.10	.28	.10	.17	.29	.15	.41
Affective	1	26	7,996	.23	.08	.28	.07	.20	.26	.20	.37
Continuance	1	15	3,564	-.06	.12	-.08	.13	-.12	.00	-.25	.09
Normative	1	15	3,515	.16	.08	.21	.06	.12	.20	.13	.28
Turnover intentions	2	21	5,722	-.08	.09	-.10	.00	-.12	-.04	-.10	-.10
Work-life balance											
Family interference with work	1	13	4,849	-.07	.06	-.09	.05	-.11	-.04	-.15	-.03
Work interference with family	1	14	5,112	-.09	.09	-.11	.08	-.14	-.05	-.22	-.01
Work-nonwork spillover: Negative	1	17	8,094	-.09	.06	-.11	.05	-.12	-.06	-.18	-.05
Work-nonwork spillover: Positive	1	3	4,585	.23	.03	.29	.00	.20	.26	.29	.29
Expatriate adjustment											
Overall	1	31	4,513	.25	.14	.30	.13	.20	.30	.13	.47
General	1	16	2,661	.22	.11	.27	.10	.16	.28	.14	.41
Interactional	1	18	2,977	.20	.12	.24	.11	.14	.26	.09	.38
Work	1	14	2,378	.22	.15	.26	.16	.14	.30	.05	.47
Burnout											
Emotional exhaustion	2	110	33,671	-.15	.12	-.18	.02	-.17	-.13	-.21	-.15
Depersonalization	2	116	36,737	-.18	.14	-.24	.04	-.21	-.15	-.29	-.19
Personal accomplishment	2	110	32,526	.22	.12	.28	.05	.20	.24	.22	.34
Leader-member exchange	1	11	2,919	.13	.10	.15	.09	.07	.19	.04	.27
Abusive supervision perceptions	1	6	2,879	-.02	.04	-.03	.00	-.05	.01	-.03	-.03
Workplace harassment perceptions	1	14	6,355	-.14 ^a	.05 ^b	-.17	.00	-.16	-.11	-.17	-.17
Interpersonal											
Social network roles											
Expressive: Brokerage	1	56	3,037	.10	.14	.11	.01	.06	.14	.10	.13
Expressive: In-degree	1	58	4,041	.09	.12	.10	.01	.06	.12	.09	.11
Instrumental: Brokerage	1	56	3,626	.11	.13	.12	.01	.08	.14	.11	.14
Instrumental: In-degree	1	63	4,494	.13	.16	.15	.12	.09	.17	-.004	.30
“Getting along” performance	1	22	2,553	.07 ^a	.10	.09	.05	.03	.11	.03	.16
Interpersonal citizenship behavior	1	13	3,129	.07	.13	.10	.16	.00	.14	-.10	.30
Performance											
Validity	3	243	43,656	.07	.11	.10	.00	.06	.09	.10	.10
Training and job performance	1	93	12,943	.08	.12 ^b	.13	.13	.06	.10	-.04	.29
Overall job performance											
Supervisor-ratings	11	313	71,016	.12	.09	.18	.04	.11	.13	.14	.23
Peer-ratings	1	12	3,739	.13 ^a	.07	.27	.09	.09	.17	.16	.39
Subordinate-ratings	1	8	2,444	.05 ^a	.04	.12	.00	.02	.08	.12	.12
Self-ratings	1	8	2,621	.22	.12	.28	.14	.13	.31	.10	.45
Technical performance	3	108	26,581	.10	.11	.13	.00	.08	.12	.13	.13

(table continues)

Table 3 (continued)

Variable	<i>m</i>	<i>k</i>	<i>N</i>	\bar{r}	<i>SD_r</i>	$\bar{\rho}$	<i>SD_ρ</i>	95% CI		80% CR	
								LO	HI	LO	HI
Contextual performance	2	37	7,210	.18	.14	.25	.00	.14	.23	.25	.25
Organizational citizenship behavior											
Overall	1	34	6,700	.07	.12	.10	.13	.03	.11	-.07	.27
Global	1	16	2,870	.05	.13	.07	.15	-.01	.11	-.12	.26
Organizational	1	9	2,017	.01	.10	.01	.10	-.06	.08	-.12	.15
Change	1	6	1,144	.10	.06	.14	.00	.05	.15	.14	.14
Change-oriented behavior	1	8	2,855	.20	.07	.24	.06	.15	.25	.17	.31
Voice	1	8	2,152	.18	.07	.22	.04	.13	.23	.17	.27
Adaptive performance	2	79	9,949	.08	.12	.10	.00	.05	.10	.09	.10
Creativity	2	103	38,600	.13	.06	.18	.01	.12	.14	.17	.19
Performance rating leniency	1	11	1,109	.10	.13	.12	.10	.02	.18	-.01	.25
Counterproductivity											
Safety performance	1	20	6,378	-.07	.10	-.09	.10	-.11	-.03	-.22	.05
Irresponsible behavior	1	8	19,623	-.03 ^a	.02 ^b	-.05	.00	-.05	-.02	-.05	-.05
Counterproductive work behavior											
Overall	3	10	2,273	-.09	.08	-.11	.04	-.14	-.04	-.16	-.06
Other-ratings	1	7	1,066	.03	.13	.04	.15	-.07	.13	-.15	.23
Interpersonal	1	8	2,360	.02	.11	.02	.11	-.06	.10	-.12	.17
Organizational	1	5	1,836	-.07	.12	-.09	.13	-.18	.04	-.26	.08
Withdrawal behavior	1	5	1,140	-.16	.10	-.20	.09	-.25	-.07	-.32	-.08
Cyberloafing	1	7	2,206	.00	.10	.00	.10	-.07	.07	-.13	.13
Absenteeism	1	10	1,326	.07	.13	.09	.12	-.01	.15	-.07	.25

Note. Values in the top 33% of effect sizes (i.e., $\bar{\rho} \geq .20$) are presented in italic type. *m* = total number of independent meta-analyses; *k* = number of independent samples; *N* = total sample size; \bar{r} = *M* sample-size weighted observed correlation; *SD_r* = *M* observed standard deviation; $\bar{\rho}$ = estimated population correlation corrected for unreliability; *SD_ρ* = standard deviation of population correlation; 95% CI = 95% confidence interval around observed correlation; 80% CR = 80% credibility interval around population correlation.

^a Mean sample-size weighted observed correlation is a composite. ^b *SD_r* was neither reported nor calculable from the source meta-analysis.

mates are empirical effect size benchmarks that can be used to make comparisons to other psychological constructs.

Lower Order Traits

Table 6 presents meta-analyses for extraversion's lower order traits. Given sparser data, we summarize results in a single table, with one column corresponding to each trait. To conserve space, we only report population correlations. However, the Tables S9 to S15 in the online supplemental material provide full meta-analytic results for all lower order traits. As before, we focus reporting on effects with $\rho_s \geq .20$.

Assertiveness. The assertiveness aspect has relations in a desirable direction to seven of nine variables (78%). Substantial effects include academic procrastination ($\bar{\rho} = -.24$), overall job performance ($\bar{\rho} = .20$), life satisfaction ($\bar{\rho} = .22$), and leadership effectiveness ($\bar{\rho} = .48$).

Dominance. The dominance facet shows a desirable pattern of effects for 20 out of 22 variables (91%). On the job, its qualifying relations include demonstrating effort ($\bar{\rho} = .26$), job satisfaction ($\bar{\rho} = .27$), and creativity ($\bar{\rho} = .30$). In the career/lifespan domain, its substantial effects include life satisfaction ($\bar{\rho} = .27$), and the three leadership variables of overall leadership ($\bar{\rho} = .34$), leadership effectiveness ($\bar{\rho} = .38$), and transformational leadership ($\bar{\rho} = .27$).

Activity. The activity facet displays effects in a desirable direction for all nine variables (100%). Top tercile effects include academic procrastination ($\bar{\rho} = -.25$), overall job performance ($\bar{\rho} = .20$), and leadership effectiveness ($\bar{\rho} = .34$).

Sensation-seeking. Like its fellow traits, the sensation-seeking facet shows a substantial effect for life satisfaction ($\bar{\rho} = .29$). However, for the remaining variables, results indicate that it is largely a disadvantage. It has favorable effects for only two of nine variables (22%), as well as substantially undesirable effects for safety performance ($\bar{\rho} = -.27$) and procrastination ($\bar{\rho} = .21$).

Enthusiasm. The enthusiasm aspect has relations in a desirable direction to all 10 extant variables (100%). Overall job ($\bar{\rho} = .23$) and contextual performance ($\bar{\rho} = .25$) relations qualify as substantial effects on the job. For the career/lifespan domain, enthusiasm has an appreciable effect for life satisfaction ($\bar{\rho} = .56$), and comparably strong effects for overall leadership ($\bar{\rho} = .55$) and transformational leadership ($\bar{\rho} = .48$), but a smaller leadership effectiveness ($\bar{\rho} = .25$) effect.

Sociability. The sociability facet shows relations in a desirable direction for 16 out of 21 variables (76%). Nevertheless, in contrast to its counterparts, most of these relations are tiny ($|\bar{\rho}| < .04$), indicative of little advantage. Still, two interpersonal exceptions are found: Sociability has substantial relations to peer-ratings of job performance ($\bar{\rho} = .21$) and overall leadership ($\bar{\rho} = .35$).

Positive emotions. The positive emotions facet has a pattern of advantageous effects for 42 out of 44 variables (95%). It has a strong effect for overall adjustment to college ($\bar{\rho} = .47$). On the job, it has positive relations to the motivations, values, and interests variables of regulatory focus promotion ($\bar{\rho} = .41$) and employee engagement ($\bar{\rho} = .62$). It also has substantial effects for attitudes and well-being category variables, including job satisfaction ($\bar{\rho} = .33$), organizational commitment ($\bar{\rho} = .40$), work-life balance variables ($|\bar{\rho}|$ range = .20 to .37), burnout components

Table 4
Meta-Analyses of Extraversion and Career/Lifespan Variables

Variable	<i>m</i>	<i>k</i>	<i>N</i>	\bar{r}	<i>SD_r</i>	\bar{p}	<i>SD_p</i>	95% CI		80% CR	
								LO	HI	LO	HI
Motivations, values, and interests											
Personal values											
Self-enhancement	1	55	54,624	.21	.10	.28	.13	.18	.24	.12	.44
Achievement	1	55	54,946	.23	.13	.30	.16	.20	.26	.10	.50
Hedonism	1	53	54,165	.16	.07	.21	.09	.14	.18	.10	.32
Power	1	54	54,599	.23	.13	.31	.17	.19	.27	.09	.52
Self-transcendence											
Benevolence	1	57	55,110	-.05	.15	-.07	.19	-.09	-.01	-.31	.18
Universalism	1	56	55,072	-.04	.19	-.05	.25	-.09	.01	-.37	.27
Openness to change	1	54	54,364	-.05	.12	-.06	.15	-.08	-.02	-.26	.13
Self-direction	1	55	54,624	.21	.08	.28	.10	.19	.23	.16	.40
Stimulation	1	55	54,959	.12	.13	.17	.17	.09	.15	-.05	.38
Conservation	1	51	53,692	.28	.06	.37	.06	.26	.30	.29	.45
Conformity	1	55	54,624	-.12	.14	-.17	.18	-.16	-.08	-.40	.06
Security	1	55	54,959	-.13	.15	-.18	.20	-.17	-.09	-.43	.08
Tradition	1	54	54,377	-.04	.13	-.06	.17	-.07	-.01	-.27	.16
Tradition	1	51	53,692	-.18	.14	-.26	.20	-.22	-.14	-.51	-.001
Vocational interests											
Realistic	2	51	14,456	.02	.06 ^b	.03	.01	.01	.04	.02	.04
Investigative	2	51	14,456	.03	.06 ^b	.03	.02	.01	.05	.01	.06
Artistic	2	51	14,456	.08	.06 ^b	.10	.00	.06	.10	.10	.10
Social	2	51	14,456	.28	.06 ^b	.33	.02	.26	.30	.30	.36
Enterprising	2	51	14,456	.37	.06 ^b	.44	.01	.35	.39	.43	.45
Conventional	2	51	14,456	.07	.06 ^b	.08	.02	.05	.09	.05	.11
Entrepreneurial intentions	1	7	2,020	.14	.12	.17	.12	.05	.23	.01	.32
Procrastination	1	18	3,951	-.11	.04	-.13	.00	-.13	-.09	-.13	-.13
Attitudes and well-being											
Career adaptability	1	13	11,370	.31	.08	.36	.08	.27	.35	.26	.46
Career satisfaction	1	13	11,050	.20	.04	.24	.01	.18	.21	.22	.26
Happiness	1	16	3,787	.40 ^a	.08	.47	.06	.36	.44	.39	.54
Life satisfaction	2	45	8,841	.21	.09	.26	.05	.18	.23	.19	.32
Interpersonal											
Emotional expressiveness	1	17	1,218	.20	.16	.26	.15	.12	.28	.07	.45
Interpersonal sensitivity	1	24	1,896	.07	.14	.09	.10	.02	.12	-.03	.22
Leadership											
Overall	1	63	12,640	.21	.14	.30	.16	.18	.25	.09	.51
Emergence	1	23	4,485	.17	.07 ^b	.24	.00	.14	.20	.24	.24
Effectiveness	1	37	7,215	.24	.07 ^b	.34	.00	.22	.26	.34	.34
Transformational leadership											
Overall	2	38	6,070	.19	.16	.28	.00	.14	.24	.28	.28
Charisma	2	19	3,591	.17	.09	.25	.00	.13	.22	.25	.25
Intellectual stimulation	2	16	2,832	.15	.11	.21	.01	.09	.20	.19	.22
Individualized consideration	2	17	2,954	.12	.10	.18	.00	.07	.17	.18	.18
Transactional leadership											
Contingent reward	1	5	1,215	.11	.07	.16	.04	.05	.17	.10	.21
Management by exception	1	5	1,215	-.02	.06	-.03	.00	-.08	.04	-.03	-.03
Passive leadership	1	6	1,310	-.07	.09	-.10	.08	-.14	.00	-.20	.001
Performance											
Job complexity	1	6	4,886	.10	.05	.12	.03	.06	.14	.08	.17
Job crafting	1	6	3,075	.19	.15	.24	.17	.08	.31	.02	.46
Turnover											
Academic attrition	1	5	3,916	.01	.04	.01	.00	-.03	.05	.01	.01
Turnover/tenure	1	13	1,437	.03	.14	.04	.13	-.05	.11	-.12	.20
Turnover	1	18	1,608	-.03	.12	-.04	.06	-.08	.02	-.11	.03
Voluntary turnover	1	13	6,795	.02	.08	.02	.08	-.02	.06	-.07	.12
Personnel data											
Commendable behavior	1	37	7,101	.06	.16	.09	.00	.01	.11	.09	.09
Productivity	1	13	53,045	.08 ^a	.02 ^b	.12	.00	.07	.09	.12	.12
Productivity	3	23	3,277	.09	.09	.11	.02	.05	.12	.08	.13
Status change	1	15	4,374	.10	.14	.11	.14	.03	.17	-.07	.30
Promotions	1	4	4,428	.16	.06	.18	.06	.10	.22	.11	.25
Salary	1	15	9,610	.11	.07	.12	.06	.07	.14	.04	.20
Counterproductivity											
Antisocial behavior	2	82	31,574	.06	.04	.07	.00	.05	.07	.07	.07

(table continues)

Table 4 (continued)

Variable	<i>m</i>	<i>k</i>	<i>N</i>	\bar{r}	<i>SD_r</i>	$\bar{\rho}$	<i>SD_ρ</i>	95% CI		80% CR	
								LO	HI	LO	HI
Aggression	1	33	9,654	-.03	.06	-.04	.01	-.05	-.01	-.05	-.02
Accidents											
Occupational	1	16	3,018	.10	.13	.17	.17	.04	.16	-.05	.39
Vehicular	1	57	43,884	.06	.07	.11	.10	.05	.08	-.02	.24

Note. Values in the top 33% of effect sizes (i.e., $\bar{\rho} \geq .20$) are presented in italic type. *m* = total number of independent meta-analyses; *k* = number of independent samples; *N* = total sample size; \bar{r} = *M* sample-size weighted observed correlation; *SD_r* = *M* observed standard deviation; $\bar{\rho}$ = estimated population correlation corrected for unreliability; *SD_ρ* = standard deviation of population correlation; 95% CI = 95% confidence interval around observed correlation; 80% CR = 80% credibility interval around population correlation.

^a Mean sample-size weighted observed correlation is a composite. ^b *SD_r* was neither reported nor calculable from the source meta-analysis.

($|\bar{\rho}|$ range = .43 to .52), leader-member exchange ($\bar{\rho} = .33$), and abusive supervision perceptions ($\bar{\rho} = -.20$). In the performance category, its effects include overall job ($\bar{\rho} = .25$) and contextual performance ($\bar{\rho} = .30$). It has a sizable effect for the counterproductivity variable of withdrawal ($\bar{\rho} = -.33$). Across the career/lifespan, substantial effects include procrastination ($\bar{\rho} = -.20$), life satisfaction ($\bar{\rho} = .56$), four leadership variables ($\bar{\rho}$ range = .34 to .53), and aggression ($\bar{\rho} = -.21$).

Summary. Table 7 synthesizes lower order traits' effects for all 58 available variables. The positive emotions facet has received the most meta-analytic attention ($N_V = 44$), followed by domi-

nance ($N_V = 22$) and sociability facets ($N_V = 21$). The assertiveness aspect ($\bar{\rho}_M = .17$, *SD* = .15), dominance facet ($\bar{\rho}_M = .17$, *SD* = .11), and activity facet ($\bar{\rho}_M = .15$, *SD* = .10) have positive grand means. By contrast, the sensation-seeking facet has a negative mean ($\bar{\rho}_M = -.05$, *SD* = .18). The enthusiasm aspect ($\bar{\rho}_M = .28$, *SD* = .18) and positive emotions facet ($\bar{\rho}_M = .29$, *SD* = .17) have strong grand means, but the sociability facet mean is weaker ($\bar{\rho}_M = .07$, *SD* = .09).

Breaking out effects by conceptual category for traits reporting ≥ 3 relations, the positive emotions facet has sizable effects for motivations, values, and interests ($\bar{\rho}_M = .38$) and attitudes and

Table 5
Summary of Meta-Analyses of Extraversion and Work Relevant Variables

Conceptual category by career domain	<i>N_v</i>	$\bar{\rho}_M$	<i>SD</i>	<i>Min</i>	<i>Q1</i>	<i>Med</i>	<i>Q3</i>	<i>Max</i>
Overall	165	.14	.12	-.17	.07	.12	.24	.47
Motivations, values, and interests	39	.20	.12	.03	.09	.20	.31	.44
Education	5	.18	.13					
Job application	2	.25	.08					
On the job	10	.25	.12					
Career/lifespan	22	.19	.12					
Attitudes and well-being	39	.18	.12	-.17	.11	.19	.27	.47
Education	8	.15	.15					
Job application	2	.16	.04					
On the job	25	.16	.10					
Career/lifespan	4	.33	.11					
Interpersonal	27	.17	.08	.03	.11	.15	.22	.34
Education	0							
Job application	9	.15	.04					
On the job	6	.11	.02					
Career/lifespan	12	.20	.09					
Performance	45	.10	.09	-.14	.06	.11	.13	.28
Education	7	.00	.10					
Job application	9	.07	.06					
On the job	17	.16	.08					
Career/lifespan	12	.09	.08					
Counterproductivity	15	.00	.10	-.20	-.07	.03	.07	.17
Education	1	.05						
Job application	1	.06						
On the job	9	-.04	.09					
Career/lifespan	4	.08	.09					
Effect size benchmarks	165	.16	.10	.00	.09	.13	.24	.47

Note. We rekeyed relations for variables with a negative (e.g., counterproductivity) or a neutral valence (e.g., personal values) in a positive direction prior to calculating overall descriptive statistics. Effect size benchmarks are based on absolute values. *N_v* = total number of variables per category; $\bar{\rho}_M$ = mean estimated population correlation across variables; *SD_ρ* = between-variables standard deviation in population correlations; *Min* = minimum correlation; *Q1* = correlation at the first quartile (i.e., 25th percentile); *Med* = median correlation; *Q3* = correlation at the third quartile (i.e., 75th percentile); *Max* = maximum correlation.

Table 6
Meta-Analyses of Extraversion's Lower Order Traits and Work Relevant Variables

Variable	Assertiveness aspect	Dominance facet	Activity facet	Sensation-seeking facet	Enthusiasm aspect	Sociability facet	Positive emotions facet
Education							
Motivations, values, and interests							
Academic procrastination	-.24	-.17	-.25	.13	-.19	-.13	-.18
Attitudes and well-being							
Adjustment to college							.47
Performance							
Academic success		.15				.01	
Training success		.09					
On the job							
Motivations, values, and interests							
Regulatory focus: Prevention							.05
Regulatory focus: Promotion							.41
Demonstrating effort		.26				.00	
Employee engagement							.62
Attitudes and well-being							
Job satisfaction	.18	.27	.09			.00	.33
Organizational commitment							.40
Turnover intentions							-.18
Family interference with work							-.28
Work interference with family							-.25
Work-nonwork spillover: Negative							-.20
Work-nonwork spillover: Positive							.37
Burnout							
Emotional exhaustion							-.43
Depersonalization							-.47
Personal accomplishment							.52
Leader-member exchange							.33
Abusive supervision perceptions							-.20
Interpersonal							
"Getting along" performance		.12				.02	
Performance							
Validity		.13				.03	
Training and job performance		.16				.00	
Overall job performance							
Supervisor ratings	.20	.14	.20	-.06	.23	.08 ^a	.25
Peer ratings		.19				.21	
Subordinate ratings		.09				.09	
Technical performance	.13	.09	.14	.12	.08	.03 ^a	.09
Contextual performance	.15	.16	.09	-.07	.25	.11	.30
Voice							.22
Adaptive performance						.01	
Creativity		.30					
Counterproductivity							
Safety performance				-.27			
Irresponsible behavior		-.09				.01	
Withdrawal behavior							-.33
Career/lifespan							
Motivations, values, and interests							
Procrastination				.21			-.20
Attitudes and well-being							
Life satisfaction	.22 ^a	.27 ^a	.14 ^a	.29	.56	.09 ^a	.56
Interpersonal							
Interpersonal sensitivity						.12	
Leadership		.34			.55	.35	.46
Emergence							.34
Effectiveness	.48	.38	.34		.25	-.04	.39
Transformational leadership		.27			.48	.17	.53
Transactional leadership							.11
Performance							
Commendable behavior		.12					
Salary							-.06
Counterproductivity							
Antisocial behavior	.01	.04	-.03	.18	-.10	-.04	-.14
Aggression	.03	.07	-.03	-.03	-.14	-.03	-.21

Note. All values are estimated population correlations ($\bar{\rho}$) corrected for unreliability. Values in the top 33% of effect sizes (i.e., $\bar{\rho} \geq .20$) are presented in italic type. To conserve space, relations to components of employee engagement, job satisfaction, and organizational commitment are not included here.

^a Results of second-order meta-analysis.

Table 7
 Summary of Meta-Analyses of Extraversion's Lower Order
 Traits and Work Relevant Variables

Lower order trait by conceptual category	N_v	$\bar{\rho}_M$	SD
Assertiveness aspect	9	.17	.15
Motivations, values, and interests	1	.24	
Attitudes and well-being	2	.20	.03
Interpersonal	1	.48	
Performance	3	.16	.04
Counterproductivity	2	.02	.01
Dominance facet	22	.17	.11
Motivations, values, and interests	2	.22	.06
Attitudes and well-being	2	.27	.00
Interpersonal	4	.28	.11
Performance	11	.15	.06
Counterproductivity	3	.01	.09
Activity facet	9	.15	.10
Motivations, values, and interests	1	.25	
Attitudes and well-being	2	.12	.04
Interpersonal	1	.34	
Performance	3	.14	.06
Counterproductivity	2	-.03	.00
Sensation-seeking facet	9	-.05	.18
Motivations, values, and interests	2	-.17	.06
Attitudes and well-being	1	.29	
Interpersonal	0		
Performance	3	.00	.11
Counterproductivity	3	.14	.15
Enthusiasm aspect	10	.28	.18
Motivations, values, and interests	1	.19	
Attitudes and well-being	1	.56	
Interpersonal	3	.43	.16
Performance	3	.19	.09
Counterproductivity	2	-.12	.03
Sociability facet	21	.07	.09
Motivations, values, and interests	2	.07	.09
Attitudes and well-being	2	.05	.06
Interpersonal	5	.12	.15
Performance	9	.06	.07
Counterproductivity	3	-.02	.03
Positive emotions facet	44	.29	.17
Motivations, values, and interests	8	.38	.21
Attitudes and well-being	22	.28	.17
Interpersonal	5	.37	.16
Performance	6	.18	.14
Counterproductivity	3	-.23	.10

Note. N_v = total number of variables per category; $\bar{\rho}_M$ = mean estimated population correlation across variables; SD_{ρ} = between-variables standard deviation in population correlations.

well-being ($\bar{\rho}_M = .28$) categories. Interpersonal effects are strong for the dominance facet ($\bar{\rho}_M = .28$) and enthusiasm ($\bar{\rho}_M = .43$), but dissimilar for the aspect's positive emotions ($\bar{\rho}_M = .37$) and sociability ($\bar{\rho}_M = .12$) facets. Performance reveals some diverse relations. Assertiveness and its dominance and activity facets show comparable effects ($\bar{\rho}_M$ range = .14 to .16), but the mean for the sensation-seeking facet is nil ($\bar{\rho}_M = .00$). Although the enthusiasm aspect shows a sizable effect ($\bar{\rho}_M = .19$), this is mostly attributable to the positive emotions facet ($\bar{\rho}_M = .18$ vs. .06 for the sociability facet). Finally, sensation-seeking ($\bar{\rho}_M = .14$) and positive emotions ($\bar{\rho}_M = -.23$) facets have effects in opposite directions for counterproductivity, whereas mean effects for dominance and sociability facets are nil. Overall,

findings show diversity among extraversion's lower order traits in contributing to its work advantage and areas of benefit for certain conceptual categories.

Discussion

Drawing on 97 meta-analyses reporting extraversion relations to 165 work variables, as well as relations of extraversion's lower order traits to 58 variables, this article reports the most comprehensive quantitative review of extraversion's workplace effects available in the literature. Extraversion has effects in a desirable direction for 90% of variables, which represents a degree of consistency not previously documented. Further, modeling extraversion as a multidimensional construct reveals rich and novel insights. The enthusiasm aspect and its positive emotions facet show strong effects, and the assertiveness aspect and its dominance and activity facets are also advantageous. By contrast, the sociability facet has few benefits and the sensation-seeking facet may be something of a disadvantage. Overall, results show a pervasive extraversion advantage at work, with lower order traits contributing to it, but also displaying distinct, informative relations.

Results also represent extraversion's empirical effect size distribution for work variables. This information exhibits the magnitudes of extraversion's effects and facilitates making relative comparisons with other constructs. Putting findings into a wider empirical context, we compared effects for extraversion to the effect sizes reported for other individual differences constructs in management relevant meta-analyses (see Table 2 from Paterson, Harms, Steel, & Credé, 2016). Across comparable variables, extraversion's mean absolute effect is smaller than the grand mean for individual differences constructs ($|\bar{\rho}| = .16$ vs. .21); yet, its top tercile of effects approaches or exceeds this benchmark. In the next section, we synthesize findings in the top 33% of effect sizes and arrange them into four advantages. We also draw on lower order trait evidence, as available, to better understand them. These four advantages enable a conceptual synthesis of the empirical evidence and act as a new lens for understanding extraversion's effects at work. Throughout our descriptions of the four advantages, we highlight associated empirical findings in parentheses.

Extraversion Advantages at Work: An Empirical Synthesis and Corresponding Theory

Motivational advantage. This first advantage reflects evidence that approach motivation is a defining attribute of extraversion at work. The trait is characterized by greater sensitivities to rewarding stimuli, positive approach goals, and opportunities for development (regulatory focus promotion, learning goal orientation), as well as the necessary self-confidence (self-efficacy) to reach its desired ends. High energy and concentrated engagement are hallmarks of the motivation (employee engagement, demonstrating effort), both of which stem, in part, from the dominance, activity, and positive emotions facets. Results correspond to theory, which links extraversion to reward sensitivity and to an active behavioral activation system (Depue & Collins, 1999; Gray & McNaughton, 2000). Relatedly, extraversion is associated with higher order goals that are well-matched to the workplace. Extraversion is characterized by drives to (a) influence others, gain status, and achieve socially recognized success (enterprising inter-

ests, assessment center ratings of drive, self-enhancement values); (b) have novel, exciting, or stimulating experiences (values of stimulation, openness to change); and (c) work with and help others (social interests). These goals have compelling linkages to reward sensitivities associated with assertiveness, sensation-seeking, and enthusiasm traits, respectively. In summary, extraversion's motivational advantage derives from enhanced sensitivities for and drives to approach desired rewards in the workplace; it also functions to activate the behaviors necessary to accomplish these positive approach goals.

Emotional advantage. In their review of the wide body of neurophysiological and factor analytic research, Clark and Watson (2008) argue that the experience of positive affect lies at the core of extraversion (see also Watson & Clark, 1997). The meta-analytic evidence reviewed here expounds on this claim, providing persuasive evidence that more frequent experiences of higher levels of positive emotions represents a second work advantage of extraversion. This emotional advantage connects to the preceding motivational advantage insofar as the experience of positive affect is linked to reward processing, especially anticipatory or actual enjoyment that comes from obtaining a reward (Depue & Morrone-Strupinsky, 2005). The work environment offers multiple avenues to pursue rewarding social and material benefits, as well as the associated opportunities to experience positive affect. Therefore, it makes sense that extraversion substantially relates to positively valenced job attitudes toward work (job satisfaction, organizational commitment) and general attitudes (happiness), enriching the nonwork domain (positive work–nonwork spillover), and persisting across the lifespan (career satisfaction, life satisfaction). The emotional advantage also serves as a protective buffer against negatively valenced attitudes (work–life imbalance) and adverse experiences (burnout). Finally, this advantage is associated with capacity to successfully adjust to novel environments in education (adjustment to college), job application (assessment center ratings of stress tolerance), and job contexts (expatriate adjustment). Unsurprisingly, the emotional advantage is largely due to the positive emotions facet; in contrast, other lower order traits show smaller or sparser effects. In sum, extraversion's emotional advantage is the result of beneficial effects stemming from more frequent experiences of higher levels of positive emotion.

Interpersonal advantage. Theory suggests that social interaction can be a rewarding end in itself, as well as a means to gain rewards (Smillie, 2013). Extraversion is associated with skill on both of these accounts, which acts as a third advantage. Our synthesis provides an illustration across variables, showing that extraversion is characterized by fluency in nonverbal (emotional expressiveness) and verbal communication (assessment center ratings of oral presentation), as well as attention and sensitivity to others (individualized consideration), all of which contribute to mutually rewarding interactions. Extraversion is also marked by persuasion (assessment center ratings of influence), especially in job contexts with rewards at stake (employment interviews, negotiation performance). Accordingly, it follows that extraversion also has sizable relations to interpersonal variables reflecting leadership. The trait predicts leadership emergence, behaviors, and effectiveness at some of the strongest magnitudes in the personality literature. Therefore, it is notable that leadership relations can be stronger at the lower order trait level. Evidence suggests that enthusiasm and assertiveness aspects, and their facets, play distinct

roles in leadership, with the former contributing more to person-oriented behaviors (e.g., transformational leadership) and the latter contributing more to task-oriented outcomes (e.g., leadership effectiveness; for a related theory, see DeYoung, 2015). Put differently, extraversion's emotional advantage contributes to leadership behaviors involved in effective social interactions, whereas its motivational advantage contributes to the effective influence of others to achieve goals (Campbell, 2013). Extraversion's interpersonal advantage, in sum, represents greater skill in interacting with and leading others.

Performance advantage. The preceding advantages help to explain why extraversion is associated with higher performance across several dimensions. A person with stronger approach motivation, more positivity, better adjustment, and superior interpersonal and leadership skill, is likely to perform better on the job. Our findings show that extraversion is associated with higher ratings of overall job performance across raters (supervisors, peers, and subordinates) and across performance dimensions (technical performance, contextual performance, low counterproductive work behavior). Concerning the role of lower order traits, assertiveness and its dominance and activity facets, as well as positive emotions, confer the most consistent effects for performance. However, our synthesis suggests there are two further components of the performance advantage, the first of which is proactivity. Extraversion is characterized by making technical innovations (creativity), adapting job characteristics (job crafting), advocating initiatives for organizational change (voice, change-oriented behavior), and seizing career opportunities (career adaptability), all of which reflect behavioral expressions of its motivational advantage. The other component is receiving rewards. Extraversion relates to receiving more commendations, more promotions, and a higher salary. Receiving rewards not only reinforces the motivation and behavior that produced them, but it can also influence others' subsequent appraisals, all of which results in accumulative advantages over a career (Judge & Hurst, 2008). In sum, extraversion's performance advantage derives from its capacity to facilitate higher performance on the job, more proactive behaviors, and contribute to a higher probability of success in receiving desired rewards in the workplace.

Potential Boundary Conditions

Results provide strong evidence of an extraversion advantage at work. However, several potential boundary conditions merit consideration when interpreting findings, drawing inferences from them, or making claims about the function of extraversion as an individual-level construct.

Contexts may matter. Contextual moderators may play a key role in the extent to which extraversion is advantageous. For example, our results show comparable effects for extraversion across job application, on the job, and career/lifespan domains ($\bar{\rho}_M$ range = .12 to .16), but a weaker effect for education ($\bar{\rho}_M = .09$). Although extraversion provides a motivational advantage in educational contexts, these settings involve trait-incongruent demands that weaken its effects, such as having positive study attitudes, showing good study habits, and regularly attending class.

Several meta-analyses in our review also investigated study-level contextual moderators. Thirty-one meta-analyses (32%) reported a contextual moderator and 49% of moderators tested were

reported as meaningful. Because most were not selected based on a theoretical relation to extraversion, we do not report detailed results here. Nevertheless, four observations from these meta-analyses deserve mention. First, extraversion showed a greater performance advantage for occupations involving interpersonal skill (e.g., management; Hough, 1992; Huang et al., 2014; Hurtz & Donovan, 2000; Salgado, 1997). Second, its effects toward leadership were stronger in private versus public industry (Hoffman, Woehr, Maldagen-Youngjohn, & Lyons, 2011; Judge, Bono, Ilies, & Gerhardt, 2002). Third, the evidence for cross-cultural moderation was mixed. North American versus Chinese samples showed stronger burnout relations to extraversion (Swider & Zimmerman, 2010; You, Huang, Wang, & Bao, 2015), but effects for overall job performance were equal in Western ($m = 6, \bar{p} = .18$) and Eastern countries ($m = 5, \bar{p} = .18$). Also, the collectivistic—individualistic cultures moderator was significant for only one form of commitment (Choi, Oh, & Colbert, 2015). Findings correspond to other research reporting no consistent differences in extraversion's cross-cultural effects (Boudreau, Boswell, & Judge, 2001). Finally, a null finding was notable: a lab- versus field-setting moderator (which was largely synonymous with student vs. nonstudent employees) had no effect in five out of six tests. Table S16 in the online supplemental material provides details from qualifying meta-analyses that reported contextual moderators and their effects.

On the basis of the aforementioned evidence, and consistent with existing theory (Tett & Burnett, 2003), we suggest that contexts that are congruent with extraversion's advantages facilitate or increase its effects, whereas trait-incongruent contexts decrease or even reverse its effects. Regarding trait congruent contexts, a growing body of work shows that task or role demands for greater personal initiative, increased social interaction, more visible rewards, higher status, and more task variety, complexity, and significance enhance extraversion's positive effects (Barrick et al., 2013; Judge & Zapata, 2015; Sterns, Alexander, Barrett, & Dambrot, 1983; Stewart, 1996; Wihler, Meurs, Wiesmann, Troll, & Blickle, 2017). Contrariwise, more research is needed to delineate contexts where extraversion's effects are reduced, or even flipped. For example, introversion appears to be an advantage in contexts where team task conflict is higher (Cullen-Lester, Leroy, Gerbasi, & Nishii, 2016), where social interaction is lower (e.g., computer programming; Gnamb, 2015), and among managers who lead more proactive employees (Grant, Gino, & Hofmann, 2011). In sum, based on the present results, the most promising direction for testing contextual moderators of extraversion is by incorporating the concept of theoretical (in)congruence with its advantages.

Nonlinear relations may matter. Meta-analyses in our review assumed linear relations; however, it is possible that too much extraversion can be disadvantageous. Work variables with evidence of nonlinear relations to extraversion, or its lower order traits, include social network size (Bozionelos, 2017), sales revenue (Grant, 2013), performance in leaderless group discussion (Waldman, Atwater, & Davidson, 2004), managerial performance (Minbashian, Bright, & Bird, 2009), and leadership (Ames & Flynn, 2007; Kaiser & Hogan, 2011). By contrast, a large-scale examination of studies using the Hogan Personality Inventory found no evidence of curvilinear effects for multiple job performance variables (Walmsley, Sackett, & Nichols, 2018; see also,

Whetzel, McDaniel, Yost, & Kim, 2010). Thus, nonlinear relations remain an open question; in view of their divergent effects, lower order traits might be promising avenues for future studies.

Intrapersonal variability may matter. Trait extraversion describes how a person tends to think, feel, or behave across situations. Meta-analysis indicates that trait levels are relatively stable across testing occasions (Roberts & DelVecchio, 2000). Yet, a growing body of research shows that individuals, regardless of their mean trait levels, tend to display a range of introverted and extraverted behaviors (Fleeson, 2004; Fleeson & Diener, 2001; Fleeson & Gallagher, 2009). Applied studies of intrapersonal variability are beginning to emerge (Lievens et al., 2018; Judge, Simon, Hurst, & Kelley, 2014) and evidence suggests that individuals all along the dimension of extraversion display a range of trait-relevant states that reciprocally shape their future behaviors, performance, and personality states. Because of their closer proximity to daily work behaviors, intrapersonal variability in motivational and emotional advantages should warrant future study.

Changes over the career/lifespan may matter. Trait levels change over the lifespan and in response to important events. Assessed as a unidimensional construct, meta-analysis indicates that extraversion levels increase modestly during adolescence and then stabilize into adulthood (Roberts et al., 2006). By comparison, a large cross-sectional study shows a flat trend throughout childhood and adulthood (Soto, John, Gosling, & Potter, 2011) and longitudinal study reports a smooth trend, followed by a decline after 60 years (Terracciano, McCrae, Brant, & Costa, 2005). Altogether, age-based changes in extraversion levels appear to be modest. However, these same studies showed divergent developmental trajectories of facet-level traits. Sociability and positive emotions levels remained constant, dominance levels increased, and levels for both activity and sensation-seeking decreased noticeably across the lifespan. Trends may have implications for extraversion's performance advantage across the career (e.g., early vs. later career performance).

Evidence also suggests that important life and workplace events can affect trait changes. Adverse work events (e.g., unemployment) can result in detrimental trait-level changes (Boyce, Wood, Daly, & Sedikides, 2015). By contrast, the experience of success can produce increases in levels of sociability and dominance facets (Roberts, Caspi, & Moffitt, 2003). Thus, occupational successes (e.g., promotions) or setbacks (e.g., demotions, job loss) may be promising avenues of longitudinal study, or as natural experiments, to understand extraversion's advantages. Wrzus and Roberts (2017) have given a promising framework for studying event-based changes in personality.

Contributions and Future Research Directions

This article makes several major contributions to the literature. First, we present the most comprehensive quantitative review to date of extraversion's effects for work variables. We show extraversion relates in a desirable direction to 90% of variables and we quantify the magnitudes of these effects. Across multiple variables and domains of work, the trait confers a pervasive and robust advantage, the consistency of which has never been documented. Second, we synthesize variables in the top tercile of effect sizes (i.e., $\bar{p} \geq .20$) and arrange them into four advantages. Extraversion's motivational (i.e., approach motivation), emotional (i.e.,

more positive emotions), interpersonal (i.e., greater social and leadership skill), and performance (i.e., higher levels of performance, proactivity, and being rewarded) advantages represent a parsimonious synthesis of its strongest empirical relations and promise to advance future research and theory building. Our third contribution is the summary of the evidence for extraversion's lower order traits. Findings indicate great diversity and utility among these traits, which helps expand knowledge about their contributions to extraversion's advantages (e.g., the role of positive emotions in the emotional advantage) and also illustrates opportunities for future investigation. Our final contribution is the framework of career domains and conceptual categories. It helps to organize the existing body of evidence and acts as an empirical audit of areas that have received inadequate research attention. This framework can also be used to organize the criterion space in future workplace research.

Our article also offers extensive fodder for future work. First, we suggest that researchers incorporate extraversion's lower order traits. Testing more fine-grained hypotheses has potential to advance theoretical understanding of extraversion's advantages. To the extent that these traits predict in common or opposite directions, or to different degrees, the overall predictive potential of the construct may be underrealized. To overcome ambiguities, we urge the use of hierarchical inventories (cf. Stanek & Ones, 2018) and data analytic methods that help disentangle the unique influences of general and specific factors in predicting criteria (i.e., bifactor models; for a useful primer, see Wiernik, Wilmot, & Kostal, 2015). Second, we suggest that researchers incorporate our evidence-based synthesis of extraversion's advantages and clarify boundary conditions of the effects. Beyond exploring contextual moderators, nonlinearity, intrapersonal variability, and time, examining other personality traits' interactive effects can help us understand compensatory or competing relations with extraversion. Third, our discussion can facilitate the development of interventions to develop leaders who have lower levels of extraversion. Interventions that help introverted leaders to learn and detect extraversion-related situations, to express trait-congruent behaviors, and then plan to strategically recover from them, may be both practical and valuable.

Limitations

Like all studies, the present investigation has its limitations. The first concerns the data themselves. To qualify for inclusion, data had to be from a meta-analysis that used self-reports of extraversion to predict a consequential work variable. Thus, we were unable to examine a host of moderators and other considerations (e.g., variables without a meta-analysis, meta-analyses using informant-ratings of extraversion, occupation-specific meta-analyses). All reported effects are zero-order correlations that may leave mediators, moderators, or other unmeasured variables undetected. However, results are useful baselines of comparison for future studies of such issues.

The second limitation is that extraversion is not the sole determinant of work and career success. In this study, we reviewed and synthesized extraversion's effects in isolation. However, in practice, multiple personality traits, cognitive abilities, and other personal characteristics act in concert to influence work variables. Other attributes may have supplementary, complementary, contra-

dictory, or interactive effects with extraversion. A practical implication is that introverted persons should not interpret our findings to suggest that they will inevitably be at a disadvantage. To the contrary, numerous examples could be given of introverts who perform masterfully and achieve greatly. Perhaps the key insight from the evidence here is that the success of introverts is likely not due to their introversion, but rather to relevant expertise, abilities, or other attributes.

Conclusion

In summary, results show a small, but pervasive extraversion advantage at work, which spans multiple career domains and conceptual categories of variables. Findings also reveal areas with substantial effect sizes, which we synthesize into four advantages of extraversion at work: motivational, emotional, interpersonal, and performance. The lower order trait evidence provides further insights into these advantages and shows that the desirable contributions of extraversion at work stem from the enthusiasm and assertiveness aspects, the positive emotions, dominance, and activity facets, but not as much from sociability and sensation-seeking facets. In the final analysis, extraversion is an important human capital consideration. Theory and practice alike promise to benefit from incorporating and harnessing extraversion and its advantages at work.

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- References marked with an asterisk indicate meta-analyses included in second-order review.
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