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The Five-Factor Model of Personality Traits and Organizational Citizenship Behaviors: A Meta-Analysis

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Using meta-analytic tests based on 87 statistically independent samples, we investigated the relationships between the five-factor model (FFM) of personality traits and organizational citizenship behaviors in both the aggregate and specific forms, including individual-directed, organization-directed, and change-oriented citizenship. We found that Emotional Stability, Extraversion, and Openness/Intellect have incremental validity for citizenship over and above Conscientiousness and Agreeableness, 2 well-established FFM predictors of citizenship. In addition, FFM personality traits predict citizenship over and above job satisfaction. Finally, we compared the effect sizes obtained in the current meta-analysis with the comparable effect sizes predicting task performance from previous meta-analyses. As a result, we found that Conscientiousness, Emotional Stability, and Extraversion have similar magnitudes of relationships with citizenship and task performance, whereas Openness and Agreeableness have stronger relationships with citizenship than with task performance. This lends some support to the idea that personality traits are (slightly) more important determinants of citizenship than of task performance. We conclude with proposed directions for future research on the relationships between FFM personality traits and specific forms of citizenship, based on the current findings.

Keywords: organizational citizenship behaviors (OCBs), five-factor model, FFM, Big Five, personality

For several decades now, both researchers and practitioners have recognized the essential role of behaviors considered discretionary, spontaneous, or less constrained by role requirements (e.g., Katz, 1964; Organ, Podsakoff, & MacKenzie, 2006). Organizational citizenship (Organ et al., 2006), contextual performance (Motowidlo & Van Scotter, 1994), and change-oriented extrarole behaviors (including employee voice, Van Dyne & LePine, 1998, or taking charge, Morrison & Phelps, 1999) are regarded as important for work effectiveness (Allen & Rush, 1998; MacKenzie, Podsakoff, & Fetter, 1991; N. P. Podsakoff, Whiting, Podsakoff, & Blume, 2009). Despite advances in clarifying what drives workplace citizenship (e.g., Borman, Penner, Allen, & Motowidlo, 2001; Hurtz & Donovan, 2000; Ilies, Fulmer, Spitzmuller, & Johnson, 2009; Organ & Ryan, 1995), there is much to be gained from further meta-analytic investigations, especially from those focusing on personality predictors. Considered discretionary, citizenship behaviors are less mandated formally (e.g., through job descriptions) than are task-performance behaviors. Thus, employees' personality traits may predict their citizenship engagement to a greater extent than they predict their task performance (Borman & Motowidlo, 1993).

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Unresolved Issues Regarding Citizenship and Personality

Several issues in the research area connecting personality traits and citizenship remain ambiguous. First, after several decades of investigating the relationships between five-factor model (FFM) traits and citizenship, a number of effect sizes are not known. Prior meta-analyses remain limited either in the number and focus of personality predictors (e.g., including only Conscientiousness and Agreeableness; Ilies et al., 2009; Organ & Ryan, 1995) or in the scope of citizenship criteria (e.g., focusing solely on affiliative citizenship, such as interpersonal cooperation and compliance, and leaving out change-oriented forms; Hurtz & Donovan, 2000; Ilies et al., 2009).

There is also lack of agreement on the extent to which specific personality traits are of potential use to predict citizenship. McCrae

and Costa's (1997) statement that "industrial and organizational psychologists should include measures of Openness in their personnel selection batteries" (p. 840) is in contrast with the view that "Openness to experience does not have a discernible relationship to OCB [organizational citizenship behavior]" (Organ et al., 2006, p. 82). In previous meta-analytic reviews, Openness emerged as a meager predictor of citizenship (e.g., job dedication, $\hat{\bar{\rho}} = .01$; Hurtz & Donovan, 2000). Yet more careful theoretical anchoring and construct specification should place Openness as predictive of at least some forms of citizenship, such as change-oriented citizenship (e.g., employees high in Openness are curious, creative, independent, and need variety, and this should make them more likely to engage in change-oriented citizenship). Empirical tests in this direction have been limited. Despite their importance for organizations, change-oriented citizenship and proactive citizenship (Grant & Ashford, 2008; Parker, Bindl, & Strauss, 2010; Van Dyne, Cummings, & McLean Parks, 1995) have not been connected meta-analytically with personality traits.

Thus, to inform older and more recent debates, our overarching goals for this study are to (a) connect all FFM traits with three major forms of citizenship, including change-oriented citizenship; (b) examine the incremental validity of Extraversion, Emotional Stability, and Openness over and above Conscientiousness and Agreeableness, two well-established personality predictors of citizenship (Ilies et al., 2009; Organ & Ryan, 1995); (c) examine the incremental validity of FFM traits over job satisfaction (Organ, 1988); and (d) test whether (and if so, which) FFM traits differentially predict citizenship and task-performance dimensions, respectively (based on current models of job performance; e.g., Motowidlo, Borman, & Schmit, 1997).

In examining these issues, our study has the potential to extend previous research in several ways. First, going beyond current meta-analyses (e.g., Hurtz & Donovan, 2000; Organ & Ryan, 1995), we determine the extent to which all FFM traits are related to important forms of citizenship, including organization-directed (OCB-O), individual-directed (OCB-I), and change-oriented (OCB-CH). The latter form of citizenship has not been investigated meta-analytically, and our focus on it is consistent with calls for better specified criteria (e.g., Hough, 2003; Oswald & Hough, 2010). Second, we determine the extent to which less well-researched FFM traits predict citizenship over and above Conscientiousness and Agreeableness, two well-established FFM predictors (Ilies et al., 2009). The issue is important from a validation standpoint, as researchers need to increase their knowledge of the incremental validity above and beyond well-established predictors (Ones, Dilchert, Viswesvaran, & Judge, 2007) and thus optimize selection batteries by maximizing the cost–benefit ratio (F. L. Schmidt & Hunter, 1998). Third, both job attitudes (e.g., job satisfaction) and personality traits are positively related to each other and to citizenship behaviors (Judge, Heller, & Mount, 2002; Organ & Ryan, 1995). What remains debatable is the extent to which each of these aspects contributes independently to each form of citizenship, an issue to be clarified in our study. Finally, we provide empirical results to inform a long-standing issue in differentially connecting FFM traits with citizenship and task performance. According to one prominent performance model (Borman & Motowidlo, 1993; Motowidlo et al., 1997), personality traits should be more predictive of citizenship than of task performance. Our study extends existing research (e.g., Borman et al., 2001) by meta-analytically testing and clarifying this issue with a broader criterion domain of citizenship, including OCB-CH.

Contributions Beyond Previous Personality–Citizenship Meta-Analyses

Before discussing specific predictions, we outline the extent to which our study uniquely adds to current meta-analyses. We present summaries of previous meta-analyses connecting FFM traits with citizenship (i.e., Borman et al., 2001; Hurtz & Donovan, 2000; Ilies et al., 2009; LePine, Erez, & Johnson, 2002; Organ & Ryan, 1995; P. M. Podsakoff, MacKenzie, Paine, & Bacharach, 2000) together with our summarized main results (see Appendix A). First, our study examined all FFM traits as predictors. Hurtz and Donovan (2000) included all FFM traits, but other meta-analyses did not focus on such a broad predictor space due to either lack of a sufficient number of primary studies (e.g., Borman et al., 2001; Organ & Ryan, 1995), theoretical reasons (Ilies et al., 2009), or the focus of the study (LePine et al., 2002). Second, we broadened the criterion space by including change-oriented citizenship. Although primary studies and theoretical works highlight the importance of change-oriented or proactive citizenship (e.g., Grant & Ashford, 2008; Parker & Collins, 2010; Van Dyne et al., 1995), these outcomes have not been systematically summarized in relation to FFM traits. For example, although Hurtz and Donovan included each FFM trait, their meta-analysis did not include change-oriented citizenship behaviors.

Citizenship Conceptualization

We organize the criterion space of organizational citizenship behaviors into *prosocial* (directed toward individuals or toward the organization; OCB-I and OCB-O) and *proactive* (or change-oriented; OCB-CH; Allen & Rush, 2001; Organ et al., 2006; Van Dyne et al., 1995). In line with Organ's (1997) definition of citizenship as "contributions to the *maintenance* and *enhancement* [emphasis added] of the social and psychological context that supports task performance" (p. 91), citizenship in its prosocial (or affiliative) form is directed toward the organization (OCB-O) and toward other individuals (OCB-I) and can be thought of as maintaining the social context at work. Conversely, proactive forms change and enhance organizational aspects by bringing about positive modifications (change-oriented citizenship; OCB-CH). Our conceptualization appropriately expands the criterion space by including both good-soldier (Organ et al., 2006) and good-change-agent employee behaviors (Grant & Ashford, 2008; Parker, Williams, & Turner, 2006; Van Dyne et al., 1995). Adding change-oriented to traditional forms of citizenship is consistent with calls for more studies to examine proactive behaviors (Grant & Ashford, 2008; Van Dyne et al., 1995) and with recent primary studies focusing simultaneously on prosocial and proactive citizenship (e.g., McAllister, Kamdar, Morrison, & Turban, 2007; Parker et al., 2006; Van Dyne, Kamdar, & Joireman, 2008).

Connecting FFM Traits With Citizenship

Parallel to this partitioning of citizenship into prosocial (benefiting both individuals and the organization) and proactive forms,

FFM traits can likewise be separated into two broad categories (Saucier & Goldberg, 2003). Personality researchers have noted that Conscientiousness, Agreeableness, and Emotional Stability can be interpreted based on individuals' desire to be (pro)social, including social propriety or getting-along tendencies (Hogan & Holland, 2003), functional personality (Mount, Barrick, & Ryan, 2003; Ones, Viswesvaran, & Schmidt, 1993), respect for social conventions (Paulhus & John, 1998), and impulse restraint (Digman, 1997). Tendencies to value socialization, solidarity, and communion (Saucier & Goldberg, 2003) indicate that these three personality dimensions "could be viewed as a broad collection of traits that actually are socially desirable" (Digman, 1997, p. 1249). Conversely, the remaining two traits—Extraversion and Openness—are associated with individuals'(pro)activity: dynamism or getting-ahead tendencies (Hogan & Holland, 2003); desire for agency, power, and seeking status (Paulhus & John, 1998); and inclination toward growth and actualization (Digman, 1997). Extraversion and Openness, then, reflect attributes associated with "positively valued dynamic qualities and individual ascendancy" (Saucier & Goldberg, 2003, p. 8).

In sum, prosocial and functional tendencies are specific to conscientious, agreeable, and emotionally stable individuals (Digman, 1997; Mount et al., 2003). The association can be explained by these individuals' predictable and responsible behavior (for Conscientiousness), interpersonal sensitivity (for Agreeableness), and absence of negative emotions (for Emotional Stability; Oh & Berry, 2009). Conversely, agentic, dynamic, and individual ascendancy proclivities are associated with Openness and Extraversion. Such proactive tendencies are based on curiosity and learning orientation (for Openness), dominance (for Extraversion), and proactivity (for both Openness and Extraversion; Fuller & Marler, 2009). Overall, both lexical and questionnaire-derived (for the FFM; McCrae & John, 1992; Saucier & Goldberg, 2003) and theory-based (for the citizenship domain; Organ et al., 2006; Van Dyne et al., 1995) efforts to partition the respective predictor and criterion construct spaces converge toward two broad tendencies: prosocial and proactive. Using this theoretical base, we present arguments for various configurations connecting FFM traits with organization-directed (OCB-O), individual-directed (OCB-I), and change-directed (OCB-CH) citizenship.

FFM Traits: Broad and Trait-Level Predictions

At a broad level, one can expect a pattern consistent with the prosocial–proactive partitioning used to organize both our trait predictors and citizenship criteria. Specifically, the prosocial traits consisting of a composite of Conscientiousness, Agreeableness, and Emotional Stability (i.e., the alpha factor, according to Digman, 1997) should predict corresponding prosocial individual- and organization-directed (OCB-I and OCB-O) citizenship forms. Conversely, proactive traits based on a composite of Openness and Extraversion (i.e., the beta factor; Digman, 1997) should predict change-oriented citizenship (OCB-CH). Despite their apparent efficiency, based on a broader bandwidth, predictions relying on only two broad traits (e.g., a constellation of Conscientiousness, Agreeableness, and Emotional Stability vs. an index consisting of Openness and Emotional Stability) may be less precise. Predictions based on specific FFM traits, examined next, may instead offer higher precision.

Citizenship behaviors vary in content and intended target/beneficiary (e.g., helping a fellow coworker, being loyal toward one's organization, or enacting change). Particular personality traits may be predictive of one form of citizenship more strongly than of another when they are thematically compatible (Ilies et al., 2009). Accordingly, we connect Agreeableness with individual-directed citizenship (OCB-I) and Conscientiousness with organizational-directed citizenship (OCB-O). In addition, we link both Openness and Extraversion, given their commonality around proactivity (Fuller & Marler, 2009), with change-oriented citizenship (OCB-CH).

Agreeable individuals have harmonious interpersonal environments due to their desire to get along (Barrick, Stewart, & Piotrowski, 2002): "the enactment of citizenship behaviors, particularly those targeted at individuals, may be one means of creating and maintaining such environments for themselves" (Ilies et al., 2009, p. 946). Agreeable individuals—who are sympathetic, cooperative, and trusting (Costa & McCrae, 1992)—are drawn toward quality social interactions and are better team players (Mount, Barrick, & Stewart, 1998). They should thus engage in individual-directed citizenship (OCB-I) to get along with others.

Conscientiousness is reflective of dependability, dutifulness, and self-discipline, a tendency to follow rules and value order. Thematically, such predispositions are connected with more "impersonal forms of citizenship" (Organ et al., 2006, p. 82) captured by organization-directed citizenship (OCB-O). Organ and Lingl (1995) described Conscientiousness as "a generalized work involvement tendency (i.e., a liking for rule-governed behavior that probably is more characteristic of work in organizations than in other life domains)" (p. 341). Conscientiousness drives individuals to be organization-people (committed to their organization; Barrick & Mount, 2000) and therefore willing to engage in OCB-O (Barrick & Mount, 2000).

Because of their association with agentic qualities and proactivity (Fuller & Marler, 2009), FFM traits such as Openness and Extraversion (Digman, 1997) should be more predictive of change-oriented citizenship. A prerequisite for change is noticing that it is necessary and having ideas for constructive change. High Openness employees will be at advantage in this domain due to their curiosity, creativity, need for variety, and independence (Costa & McCrae, 1992; McCrae, 1996) and more likely engage in such proactive forms of citizenship (LePine & Van Dyne, 2001). Likewise, to engage in change-directed actions, employees need to verbally present their ideas (Van Dyne & LePine, 1998) or take action and enact these constructive changes themselves (Morrison & Phelps, 1999). In all these situations, extraverted employees—or individuals with high levels of surgency—are more likely to do so (Oh & Berry, 2009).

Predicting Citizenship Beyond Conscientiousness and Agreeableness

Conscientiousness and Agreeableness are two common predictors of citizenship (Hurtz & Donovan, 2000; Ilies et al., 2009; Organ & Ryan, 1995). Their presence can be explained by strong theoretical connections between these traits and citizenship (Organ et al., 2006) and, as a result, by their presence in more primary studies. Yet additional theoretical reasons, outlined previously, support the other three traits (Emotional Stability, Extraversion,

and Openness) as citizenship predictors. We thus explore the extent to which citizenship is also predicted by these traits, after controlling for the effect of Conscientiousness and Agreeableness. If these other traits are not predictive, researchers can focus mostly on Conscientiousness and Agreeableness. Conversely, if these other traits are incrementally predictive, a broadening of the research scope would be warranted. From a practical standpoint, if these other traits explain incremental validity beyond Conscientiousness and Agreeableness, it would be in the interest of organizations desiring to select good citizens to include these other traits in personnel selection systems.

Relative Importance of FFM Traits and Job Satisfaction in Predicting Citizenship

Researchers used a two-pronged approach to establish citizenship antecedents, with one line of work investigating dispositional (e.g., FFM traits; Borman et al., 2001) and the other exploring attitudinal (e.g., job satisfaction; Organ, 1988) predictors. As noted by Organ and McFall (2004), these two strategies hold different implications: A focus on personality traits predictors has consequences for selection and placement systems, while an attention to employees' job satisfaction relates to competent managers who know how to shape subordinate attitudes. Both FFM traits and job satisfaction are theoretically and empirically established as citizenship predictors (Hurtz & Donovan, 2000; Ilies et al., 2009; Organ, 1988; Organ & Ryan, 1995). Because of their discretionary nature, citizenship behaviors can be driven both by employee satisfaction and by individual dispositions. In a previous meta-analysis, Organ and Ryan (1995) provided a comparison of two FFM personality traits (Conscientiousness and Agreeableness) and job satisfaction predicting two forms of citizenship (altruism and compliance). This comparison was, however, limited in that it included only two personality traits, did not include change-oriented citizenship (an emerging construct; Van Dyne et al., 1995) as an outcome, and did not compare the relative importance of FFM traits and job satisfaction while accounting for their intercorrelations. Thus, we investigate the extent to which job satisfaction is more important than FFM traits in predicting citizenship.

Differential Prediction of Task Performance and Citizenship

According to the job performance model of Motowidlo and colleagues (1997; Borman & Motowidlo, 1993), personality traits should have higher correlations with citizenship than with task performance. Even though personality dimensions can positively predict both task performance and citizenship, task performance is directly related to the technical core activities and is therefore bounded by employees' knowledge, skills, and abilities. Conversely, citizenship behaviors, given their discretionary nature, are less bounded by abilities and should therefore be predicted primarily by volition and personality traits. As stated by Motowidlo and colleagues (1997), "personality is most strongly associated with the contextual side of the performance domain" (p. 80).

This differential prediction is supported in some primary studies. Motowidlo and Van Scotter (1994) confirmed that Conscientiousness (dependability) correlated .31 with citizenship and .18 with task performance (statistically significant difference). Meta-analytic comparisons are less supportive. In Hurtz and Donovan (2000), the notion that personality traits predict citizenship to a greater extent was supported only for Agreeableness ($\rho = .20$ for interpersonal facilitation vs. $\rho = .08$ for task performance, with all the other differences at less than .05). Our meta-analysis includes all the FFM traits as well as broader citizenship criteria (including change-oriented) and thus allows us to more precisely determine whether personality traits predict citizenship more strongly than they relate to task performance. We expected FFM traits to predict citizenship more strongly than they predict task performance, and we tested this prediction by comparing the effect sizes uncovered in this study (FFM traits to citizenship) with comparable effect sizes from prior compatible meta-analyses (FFM traits to task performance; Hurtz & Donovan, 2000).

Method

Literature Search

We conducted an extensive literature search to identify both published and unpublished reports that examined the relationship between FFM traits and citizenship behaviors and therefore to minimize potential publication bias (Cooper, 2003). The articles were identified through multiple databases and multiple methods, including electronic searches of the PsycINFO (1887–2010), Management & Organization Studies (1947–2010), PsycARTICLES, PsycBOOKS (1806–2010), Psychology (1969–2010), and ProQuest Dissertations and Theses databases. To be inclusive, we conducted a broad search using keywords related to FFM personality traits and various dimensions or variants of citizenship (see below). The electronic search was supplemented with a manual search of reference lists of key articles and prior meta-analyses on the topic (e.g., Borman et al., 2001; Chiaburu & Harrison, 2008; Hurtz & Donovan, 2000; Ilies et al., 2009; P. M. Podsakoff et al., 2000). The search generated 743 published articles, book chapters, and unpublished reports, including 86 dissertations.

Inclusion and Exclusion Criteria

Three authors read all the abstracts and the results tables obtained from the electronic and manual search. To be included in the meta-analysis, primary studies had to meet the following criteria. First, we included primary studies that empirically examined any of the associations (FFM traits to citizenship) of interest. Second, we selected primary studies that reported sufficient data necessary to calculate an effect size (correlation coefficient) for at least one of the relationships considered in this study. Third, we included only primary studies based on samples of employees in organizations to generalize our findings to employees. Fourth, given potential issues with common method variance (Ilies et al., 2009; Organ & Ryan, 1995), we included only studies measuring FFM personality traits using self-reports and citizenship using non-self-

reports (e.g., supervisor ratings).[1] A total of 77 studies (87 statistically independent samples) met the inclusion criteria.

Two authors were involved in coding, with each author coding a subset of the articles. To verify coding accuracy, these different two authors independently coded the same subset of primary studies (25%). The interrater agreement rate was high at 98%. All the remaining discrepancies were resolved through double-checking the primary studies in question and a series of discussions. Finally, a different author randomly examined 39 correlation coefficients in 24 studies and corrected one common error (i.e., failing to reverse the sign of a correlation coefficient between Neuroticism and citizenship behavior). All the correlations for this particular relationship were thoroughly rechecked, without revealing other errors.

Coding Scheme and Study Characteristics

We grouped criteria based on the existing literature (Organ et al., 2006; P. M. Podsakoff et al., 2000) into three categories: organization-directed (OCB-O), individual-directed (OCB-I), and change-oriented citizenship (OCB-CH; Coleman & Borman, 2000; Van Dyne et al., 1995). In addition to measures isomorphic with the construct (i.e., OCB-O itself; L. J. Williams & Anderson, 1991), organization-directed citizenship (OCB-O) includes behaviors such as compliance, conscientiousness (as a behavior, not a trait), job dedication, organizational support, sportsmanship, and civic virtue. Likewise, individual-directed citizenship (OCB-I) contains interpersonal behaviors reflecting altruism, courtesy, helping, interpersonal facilitation, and personal support, as well as the isomorphic measure (i.e., OCB-I; K. Lee & Allen, 2002). Third, change-oriented citizenship (OCB-CH) groups proactive behaviors such as taking charge; personal initiative; adaptive, creative, and innovative performance; and voice. Any given citizenship behavior was classified into only one category.[2]

Meta-Analytic Procedures

We used the Schmidt-Hunter random-effects meta-analysis method to synthesize effect size estimates (Hunter & Schmidt, 2004; F. L. Schmidt, Oh, & Hayes, 2009). Because most primary studies reported reliability estimates, we used individual correction methods (VG6 Module; F. L. Schmidt & Le, 2004). Correlations reported in primary studies were corrected for measurement error in both the independent and dependent variables using local reliability estimates from primary studies. We used mean reliabilities for studies without information on reliability. Frequency-weighted mean reliabilities (coefficients alpha in almost all cases) ranged from .77 (Openness) to .81 (Emotional Stability) for FFM traits and from .83 (OCB-O) to .92 (OCB-CH) for OCB (see Appendix B).

Coefficients alpha capture random response error and item-specific error, yet they cannot detect transient and scale-specific errors (Le, Schmidt, & Putka, 2009; F. L. Schmidt, Le, & Ilies, 2003). Because coefficients alpha overestimate reliability in most cases, they underestimate true-score or construct-level relationships when used for correcting for measurement error (Le et al., 2009). Nonetheless, we used coefficient alpha for FFM traits to be directly comparable with previous meta-analyses that have relied on alpha coefficients (e.g., Barrick & Mount, 1991; Hurtz & Donovan, 2000; Ilies et al., 2009). Concerning the most appropriate correction for our criterion outcomes, there is an ongoing debate about which type of reliability to utilize to estimate the reliability of performance ratings (see both Murphy & DeShon, 2000, and F. L. Schmidt, Viswesvaran, & Ones, 2000). Despite good points on both sides, there is a general lack of information on types of reliability other than coefficient alpha for citizenship measures.[3] We therefore used coefficient alpha for correcting for measurement error in citizenship measures to be conservative and comparable with prior meta-analyses on the personality–OCB relationship (see Berry, Ones, & Sackett, 2007; Dalal, 2005; Ilies et al., 2009; Organ & Ryan, 1995). However, we also separately report results corrected for measurement error in the criterion measure using a meta-analytic interrater reliability (Hurtz & Donovan, 2000) for informational purposes; these results are directly comparable to prior meta-analyses on the personality–job performance relationship (e.g., Barrick & Mount, 1991; Hurtz & Donovan, 2000; Salgado, 1997).

After correcting for measurement error, the correlations reported in primary studies were further corrected for range restriction using range restriction ratios (u_x) based on prior meta-analyses (F. L. Schmidt, Shaffer, & Oh, 2008). The u_x values used ranged from .91 (Emotional Stability) to .92 (Extraversion) for FFM traits (see Appendix B for more information). We corrected for both direct and indirect range restriction following the correction procedures in F. L. Schmidt, Oh, and Le (2006). Because of the low amount of range restriction (high u_x ratios), the results were practically the same (difference of less than .01 in nearly all cases). Given the negligible differences, we report only results corrected for direct range restriction.

We examined the variability (validity generalization) of the corrected correlations across studies by calculating 80% credibility intervals and the standard error of (error band around) the mean true-score correlations by computing their 95% confidence intervals. We also report the percentage of the variability in correlations across studies accounted for by statistical artifacts. A lower percentage indicates that the proportion of true between-studies (residual) variance relative to observed variance is large, which suggests the existence of moderator(s); this percentage-based index can be deceptive when the observed variance is small. The credibility interval and associated true standard deviation (SD_ρ) provide additional information to aid interpretation of potential moderating effects: If credibility intervals are wide and the lower bound of the interval includes zero (i.e., relatively large true standard deviation), this suggests possible moderating effects (Hunter & Schmidt, 2004). The cutoff value of the minimum number of primary studies to be included in each meta-analysis

[1] We thank the anonymous reviewers for this suggestion.

[2] Some primary studies reported results only for a global/generic form of citizenship, which was not grouped into any of the major three dimensions. It was, however, used in omnibus results for the aggregate citizenship category (the broadest category, including all forms of citizenship). Given that this global form of citizenship typically captures only OCB-O and OCB-I and that many studies used this global measure of OCB, the results for aggregate OCB reported below may underrepresent OCB-CH.

[3] Bing et al. (2007) estimated ICC(1) at .38 and .44 for peer ratings of OCB-I and OCB-O, respectively. Although not reported in the study, Mark Bing (personal communication, April 17, 2010) computed the interrater reliability at .59 for OCB. We thank Mark Bing for providing this information.

was set to three based on arguments that good empirical evidence exists when an important relationship is found in at least three different studies from at least two different researchers (Chambless & Hollon, 1998).

For the moderator analyses by citizenship dimension, we first classified the primary effect sizes into the three major dimensions (OCB-I, OCB-O, and OCB-CH) and then conducted separate meta-analyses. An immediate issue when using these three citizenship dimensions as criteria, in light of previous research, was their discriminant validity. Even though LePine and colleagues (2002) noted the need to aggregate citizenship dimensions, researchers continue to differentiate them for theoretical purposes and empirical reasons, especially in their individual- and organization-directed forms (OCB-I and OCB-O; Ilies et al., 2009). With the addition of change-oriented citizenship, it was necessary to first establish its discriminant validity. Thus, we meta-analyzed the relationship between OCB-CH, OCB-I, and OCB-O and used other recent meta-analyses (i.e., N. P. Podsakoff et al., 2009) for the relationship between OCB-I and OCB-O.

Furthermore, some studies measured OCB-I and OCB-O using a direct measure (K. Lee & Allen, 2002; L. J. Williams & Anderson, 1991), while others measured OCB-I using multiple behaviors (e.g., altruism, courtesy) and OCB-O using multiple behaviors (e.g., conscientiousness, sportsmanship). In addition, OCB-CH was sometimes measured using multiple behaviors such as voice, taking charge, innovation/creativity, and personal initiative. In these cases, we used the formula to compute a unit-weight composite correlation (between a given FFM trait and multiple behaviors under each of the three citizenship dimensions; OCB-I, OCB-O, and OCB-CH; Hunter & Schmidt, 2004, pp. 435–438), taking into account intercorrelations among the multiple criteria in the same citizenship dimension; otherwise, we averaged the correlations and used the average correlation.

We maintained statistical independence in each of the meta-analyses conducted for the aforementioned three major citizenship dimensions. That is, we counted/used each sample only once for each meta-analytic relationship by retaining only one data point per sample via use of a composite correlation (e.g., correlation between Conscientiousness and a composite of altruism and courtesy, two OCB-I behaviors) or an average correlation whenever necessary. We also estimated omnibus results for aggregate citizenship (the broadest OCB domain vis-à-vis task performance) as done previously (Hurtz & Donovan, 2000; Ilies et al., 2009). For these omnibus results, we also included only one data point per sample by using a composite correlation (e.g., a correlation between Conscientiousness and a composite of OCB-I and OCB-O, two dimensions of OCB) or an average correlation whenever necessary. However, many primary studies measured OCB using only a global/overall measure without reporting results for specific dimensions of OCB; separate meta-analytic results for this global/overall OCB are in Appendix C. These studies were included in estimating the omnibus results for aggregate OCB but not for specific OCB dimensions (OCB-O, OCB-I, and OCB-CH). That is, we maintained statistical independence by including only one data point from each sample for each meta-analytic estimate (relationship). Finally, we examined potential publication bias by testing publication status as a moderator. In Appendix D, we provide the main codes and input values of primary studies/samples included in the meta-analysis. Specifically, information on publication status (as of March 2011), observed (uncorrected) correlation, sample size, reliability (coefficient alpha), and FFM and OCB dimensions are provided for each study/sample.

Results

We describe the results of the meta-analysis in Tables 1, 2, and 3. We first report the intercorrelations among citizenship dimensions and task performance to establish the discriminant validity for change-oriented citizenship (OCB-CH; see Table 1). Even though the focus of our study is on differential relationships and incremental validity, for comprehensiveness purposes, we present effect sizes for FFM traits predicting aggregate OCB (combining all citizenship forms: OCB-O, OCB-I, and OCB-CH; see Table 2). Furthermore, we test differential relationships of FFM traits with the three forms of citizenship examined in this study (see Table 3). Finally, prior to discussing specific results, we urge the reader to use appropriate levels of caution in interpreting meta-analytic results (e.g., results for Extraversion/Openness and/or OCB-CH), which are sometimes based on relatively smaller numbers of samples (e.g., $k < 10$ in some instances) and thus

Table 1
Meta-Analysis Results for OCB-CH With OCB-I, OCB-O, and Task Performance

FFM trait	k	N	$\bar{r}$	SD_r	$\hat{\rho}$	SD_ρ	%Var	CV_{LL}	CV_{UL}	CI_{LL}	CI_{UL}
OCB-CH											
OCB-O	23	4,455	.40	.16	.49	.17	16	.27	.71	.42	.57
OCB-I	30	5,917	.48	.24	.57	.26	6	.24	.90	.47	.67
Task performance	16	10,565	.26	.09	.29	.10	15	.16	.42	.24	.34

Note. The true-score correlation ($\hat{\rho}$) between OCB-I and OCB-O is .75 ($k = 37$, $N = 12{,}647$; N. P. Podsakoff, Whiting, Podsakoff, & Blume, 2009); the true-score correlation ($\hat{\rho}$) between OCB-I and task performance is .47 ($k = 24$, $N = 7{,}947$; N. P. Podsakoff et al., 2009); the true-score correlation ($\hat{\rho}$) between OCB-O and task performance is .54 ($k = 22$, $N = 6{,}018$; N. P. Podsakoff et al., 2009). It is noted that each independent sample counted only once for each relationship. FFM = five-factor model; OCB-CH = change-oriented citizenship; OCB-O = organization-directed citizenship; OCB-I = individual-directed citizenship; k = number of statistically independent samples; N = total sample size; $\bar{r}$ = sample-size-weighted mean observed (uncorrected) correlation; SD_r = sample-size-weighted observed standard deviation of correlations; $\hat{\rho}$ = mean true-score correlation corrected for unreliability; SD_ρ = standard deviation of corrected correlations; %Var = percentage of variance attributable to statistical artifacts; CV_{LL} and CV_{UL} = lower and upper bounds, respectively, of the 80% credibility interval; CI_{LL} and CI_{UL} = lower and upper bounds, respectively, of the 95% confidence interval around the corrected mean correlation.

Table 2
Omnibus Meta-Analysis Results for Aggregate OCB

FFM trait	k	N	$\bar{r}$	SD_r	$\hat{\bar{\rho}}$	$\hat{\bar{\rho}}_{inter}$	SD_ρ	%Var	CV_{LL}	CV_{UL}	CI_{LL}	CI_{UL}
Aggregate OCB[a]												
Conscientiousness	71	14,355	.14	.12	.18	.22	.12	34	.02	.34	.15	.21
Agreeableness	47	10,308	.11	.11	.14	.17	.11	41	.01	.28	.11	.18
Emotional Stability	36	8,629	.10	.11	.12	.15	.12	33	−.03	.27	.08	.17
Extraversion	34	6,700	.07	.12	.09	.11	.12	37	−.07	.25	.04	.14
Openness/Intellect	38	7,405	.11	.09	.14	.17	.08	57	.04	.25	.11	.18

Note. FFM = five-factor model; OCB = organization citizenship behavior; k = number of statistically independent samples; N = total sample size; $\bar{r}$ = sample-size-weighted mean observed (uncorrected) correlation; SD_r = sample-size-weighted observed standard deviation of correlations; $\hat{\bar{\rho}}$ = mean true-score correlation corrected for unreliability (using local coefficients alpha for both variables) and range restriction; $\hat{\bar{\rho}}_{inter}$ = mean true-score correlation corrected for unreliability (using local coefficients alpha for FFM traits and a meta-analytic interrater reliability of .53 for OCB; Hurtz & Donovan, 2000) and predictor range restriction—these values are used in Figure 1; SD_ρ = standard deviation of corrected correlations; %Var = percentage of variance attributable to statistical artifacts; CV_{LL} and CV_{UL} = lower and upper bounds, respectively, of the 80% credibility interval; CI_{LL} and CI_{UL} = lower and upper bounds, respectively, of the 95% confidence interval around the corrected mean correlation.
[a] Only one effect size was extracted from each sample for a given FFM trait. That is, each independent sample counted only once for each meta-analytic result/relationship. When there were multiple effect sizes for a given FFM trait, the effect sizes were aggregated into an effect size to maintain statistical independence using either (a) a composite correlation or (b) a simple average. As noted in Footnote 2 in the text, primary studies measuring and reporting only global OCB (i.e., contextual performance or overall OCB without reporting specific OCB dimensions/behaviors) were also included in estimating these omnibus results. The separate meta-analytic results for global OCB are presented in Appendix C.

are more likely to be subject to second-order sampling error (Hunter & Schmidt, 2004).

Discriminant Validity of Change-Oriented Citizenship

Consistent with prior research (McAllister et al., 2007; Van Dyne et al., 1995), we theorized that change-oriented citizenship is related to, yet distinct from, prosocial forms of citizenship (OCB-I and OCB-O). That is, we expected that intercorrelations between OCB-CH and both OCB-I and OCB-O would be moderate to high, but lower than the intercorrelation between OCB-I and OCB-O (Dalal, 2005; N. P. Podsakoff et al., 2009). As shown in Table 1, the corrected correlation ($\hat{\bar{\rho}}$) between OCB-CH and OCB-O was

Table 3
Meta-Analysis Results for OCB dimensions: OCB-O, OCB-I, and OCB-CH

FFM trait	k	N	$\bar{r}$	SD_r	$\hat{\bar{\rho}}$	$\hat{\bar{\rho}}_{inter}$	SD_ρ	%Var	CV_{LL}	CV_{UL}	CI_{LL}	CI_{UL}
OCB-O												
Conscientiousness	20	4,025	.13	.09	.17	.20	.09	53	.06	.28	.12	.22
Agreeableness	15	4,598	.12	.11	.17	.19	.13	26	.00	.34	.10	.24
Emotional Stability	10	2,139	.08	.11	.12	.12	.12	39	−.03	.27	.04	.20
Extraversion	9	2,017	.01	.10	.02	.02	.11	42	−.12	.16	−.07	.11
Openness/Intellect	7	1,311	.13	.08	.19	.20	.07	72	.11	.28	.12	.27
OCB-I												
Conscientiousness	28	6,347	.16	.14	.21	.25	.17	20	−.01	.43	.14	.28
Agreeableness	19	5,608	.13	.07	.18	.20	.06	61	.10	.26	.15	.22
Emotional Stability	13	3,073	.11	.08	.14	.17	.07	57	.04	.23	.09	.19
Extraversion	13	3,129	.07	.13	.10	.11	.15	25	−.09	.30	.01	.19
Openness/Intellect	10	2,049	.13	.10	.18	.20	.10	48	.05	.31	.11	.26
OCB-CH												
Conscientiousness	17	2,629	.08	.11	.10	.12	.10	49	−.03	.24	.04	.17
Agreeableness	8	1,396	−.02	.11	−.03	−.03	.11	46	−.17	.11	−.12	.06
Emotional Stability	7	1,732	.06	.10	.08	.09	.10	39	−.05	.22	−.01	.17
Extraversion	6	1,144	.10	.06	.13	.15	.00	164	.13	.13	.07	.19
Openness/Intellect	19	3,761	.11	.09	.14	.17	.08	57	.04	.24	.09	.19
Job Satisfaction[a]	11	1,843	.17	.08	.20	.26	.04	82	.15	.26	.15	.25

Note. FFM = five-factor model; OCB = organization citizenship behavior; OCB-O = organization-directed citizenship; OCB-I = individual-directed citizenship; OCB-CH = change-oriented citizenship; k = number of statistically independent samples; N = total sample size; $\bar{r}$ = sample-size-weighted mean observed (uncorrected) correlation; SD_r = sample-size-weighted observed standard deviation of correlations; $\hat{\bar{\rho}}$ = mean true-score correlation corrected for unreliability (using local coefficients alpha for both variables) and range restriction; $\hat{\bar{\rho}}_{inter}$ = mean true-score correlation corrected for unreliability (using local coefficients alpha for FFM traits and a meta-analytic inter-rater reliability of .53 for OCB; Hurtz & Donovan, 2000) and predictor range restriction; SD_ρ = standard deviation of corrected correlations; %Var = percentage of variance attributable to statistical artifacts; CV_{LL} and CV_{UL} = lower and upper bounds, respectively, of the 80% credibility interval; CI_{LL} and CI_{UL} = lower and upper bounds, respectively, of the 95% confidence interval around the corrected mean correlation.
[a] Estimated in the current study; the true-score correlations of job satisfaction with OCB-O and OCB-I are reported in Table 4's explanatory note. It is noted that each independent sample counted only once for each meta-analytic result/relationship.

.49, and the correlation between OCB-CH and OCB-I was .57, which were fairly high yet lower than the intercorrelation between OCB-I and OCB-O ($\hat{\rho}$ = .75). The relationship between OCB-CH and task performance ($\hat{\rho}$ = .29) was moderate yet lower than the relationships between both OCB-O and OCB-I and task performance ($\hat{\rho}$ = .54 and $\hat{\rho}$ = .47). This indicates that OCB-CH is related to yet distinct from the other two citizenship forms and, at the same time, closer to those than to task performance.

Predicting Aggregated Citizenship

We first provide results for the relationship between each of the FFM traits and aggregated citizenship behaviors (presented for comprehensiveness purposes; see Table 2). All FFM traits are positively correlated with citizenship: Conscientiousness ($\hat{\rho}$ = .18), Agreeableness ($\hat{\rho}$ = .14), Emotional Stability ($\hat{\rho}$ = .12), Extraversion ($\hat{\rho}$ = .09), and Openness ($\hat{\rho}$ = .14; see Table 2). All confidence intervals excluded zero; however, only the credibility intervals for Conscientiousness, Agreeableness, and Openness did not include zero. The percentage of variance attributable to statistical artifacts (ranging from 33% to 57%) and relatively large SD_ρ estimates suggest the presence of moderators. Thus, as shown in Table 3, moderator analyses by citizenship dimension were conducted (discussed in the next section). In addition, we also tested publication status as a moderator, finding no appreciable sign of publication bias. The confidence intervals for published and unpublished for all FFM traits substantially overlap, which suggests that publication bias is less of a concern (results are available from In-Sue Oh).

Differential Prediction of OCB-I, OCB-O, and OCB-CH

At a broad level, consistent with a thematic match based on prosocial aspects of the predictor and criterion, our OCB-I and OCB-O prosocial citizenship outcomes were indeed predicted by the corresponding prosocial alpha factor (a composite of Conscientiousness, Agreeableness, and Emotional Stability; Digman, 1997; composite correlation .22 for OCB-I and .19 for OCB-O); the relationship was weaker for OCB-CH (composite correlation .06).[4] Moving to a trait level, in line with our prediction, Conscientiousness predicted OCB-O (see Table 3; $\hat{\rho}$ = .17), and the correlation was the second strongest (and the credibility interval excluded zero) when compared with the ones connecting the other four traits to organization-directed citizenship (with Openness exhibiting the largest value; $\hat{\rho}$ = .19). Consistent with our prediction, Agreeableness had a moderate relationship with OCB-I ($\hat{\rho}$ = .18; see Table 3), with the credibility interval excluding zero, ahead of Emotional Stability and Extraversion ($\hat{\rho}$ = .14 and $\hat{\rho}$ = .10, respectively), but less so of Openness ($\hat{\rho}$ = .18) and lower than Conscientiousness ($\hat{\rho}$ = .21; credibility interval including zero).

Change-oriented citizenship (OCB-CH) was predicted by its corresponding agentic traits or β (a composite formed of Extraversion and Openness; Digman, 1997; composite correlation = .16).[5] Prosocial citizenship forms (.06 for OCB-I and .12 for OCB-O) were less predicted by this agentic composite. At a trait level, Extraversion and Openness ($\hat{\rho}$ = .13 and $\hat{\rho}$ = .14, respectively; credibility intervals excluded zero) predicted change-oriented citizenship somewhat better than communal traits (composite correlation = .06) such as Conscientiousness ($\hat{\rho}$ = .10), Agreeableness ($\hat{\rho}$ = −.03), or Emotional Stability ($\hat{\rho}$ = .08; all these credibility intervals included zero) as predictors.

Overall, the results do not lend strong support for a differential prediction of OCB-O and OCB-I by Conscientiousness and Agreeableness. This is not entirely surprising, provided that both of these citizenship forms tap into prosocial (i.e., proindividual and proorganizational) motives, which also underlie Agreeableness and Conscientiousness and, to a lesser extent, Emotional Stability. That is, OCB-I and OCB-O were predicted to a similar degree by prosocial/communal traits (composite correlations of .22 and .19). OCB-CH was predicted better by proactive or agentic (composite correlation of .16) rather than prosocial or communal traits (composite correlation of .06). Openness is the best or second best predictor for all three citizenship outcomes (OCB-I, OCB-O, and OCB-CH), something not highlighted in past research. An anonymous reviewer suggested that reporting the relative importance (semipartial R^2 unique to each predictor, or the average contribution of a predictor to the overall R^2) of each of the FFM traits for each citizenship dimension would be meaningful (Budescu, 1993; J. W. Johnson, 2000). Such analyses are needed given moderate to strong intercorrelations among FFM traits. Analyses with relative weights (J. W. Johnson, 2000; Step 1, Table 4) highlighted the relative importance of Openness in predicting citizenship.

Predicting Citizenship Beyond Conscientiousness and Agreeableness

Our second broad question was the extent to which other FFM traits predict citizenship over and above Conscientiousness and Agreeableness. The hierarchical multiple regression analyses are presented in Table 4, where we examine the incremental validity of Emotional Stability, Extraversion, and Openness over Conscientiousness and Agreeableness. Standardized regression coefficients, multiple *R*s, and incremental *R*s (incremental validities) were estimated using meta-analytic FFM intercorrelations reported in Mount, Barrick, Scullen, Rounds, and Sackett (2005; see Table 3 in their study), combined with FFM traits to citizenship behavior correlations estimated in this study.

For the analyses predicting all citizenship behaviors, we entered Conscientiousness and Agreeableness in the first step, followed by the remaining FFM traits. As expected, Emotional Stability, Extraversion, and Openness did explain additional variance in citizenship after controlling for Conscientiousness and Agreeableness. The difference in multiple *R* was significant (ΔR = .08) for organization-directed citizenship (OCB-O), and the pattern was

[4] We computed these composite correlations using the meta-analytic FFM intercorrelations from Mount et al. (2005); for the alpha factor, the unit-weighted composite of Conscientiousness, Agreeableness, and Emotional Stability was created and correlated with OCB (Hunter & Schmidt, 2004). Multiple *R*s estimated using the three alpha traits were virtually the same with the composite correlations.

[5] We computed composite correlations using the meta-analytic FFM intercorrelations from Mount et al. (2005). For the beta factor, the unit-weighted composite of Extraversion and Openness was created and correlated with OCB. Multiple *R*s estimated using the two beta traits were virtually the same with the composite correlations.

Table 4
Hierarchical Multiple Regression Analyses in Predicting Organizational Citizenship Behaviors

	OCB-O						OCB-I						OCB-CH					
	Step 1			Step 2			Step 1			Step 2			Step 1			Step 2		
FFM trait	β	RW	%RW	β	RW	%RW	β	RW	%RW	β	RW	%RW	β	RW	%RW	β	RW	%RW
CO	.13	.018	22.7	.09	.014	10.1	.15	.025	33.5	.13	.021	18.6	.11	.009	19.9	.08	.007	9.1
AG	.12	.018	22.0	.12	.017	11.9	.10	.017	22.5	.10	.016	14.2	−.13	.006	14.8	−.13	.007	9.4
ES	−.01	.005	5.7	−.06	.003	2.5	−.01	.006	7.8	−.05	.004	3.8	.04	.004	8.3	.00	.003	3.4
EX	−.13	.005	6.1	−.19	.009	6.8	−.02	.003	3.7	−.07	.002	2.2	.09	.011	25.3	.04	.008	10.7
OP	.22	.035	43.5	.25	.040	28.3	.16	.024	32.5	.19	.027	24.4	.11	.014	31.7	.13	.016	21.5
JS				.27	.057	40.6				.21	.041	36.7				.19	.034	46.0
All FFM traits					.083	59.4					.071	63.3					.040	54.0
Total R (R^2)	.283 (.080)			.371 (.140)			.273 (.075)			.334 (.112)			.209 (.044)			.271 (.073)		
$R_{CO, AG}$	.204						.229						.125					
$\Delta R_{ES, EX, OP \text{ over } CO, AG}$	.079[a]						.045[a]						.084[a]					
$\Delta R_{JS \text{ over FFM}}$				.091						.061						.062		
$\Delta R_{FFM \text{ over JS}}$				.124[b]						.104[c]						.071[d]		

Note. Values in parentheses are relative weights (J. W. Johnson, 2000), which add up to R^2 and relative weights in percentage form, which add up to 100%, respectively. True-score correlations between FFM traits and JS from Judge, Heller, and Mount (2002) and true-score intercorrelations among FFM traits from Mount, Barrick, Scullen, Rounds, and Sackett (2005) were used to complete the input matrix. True-score correlations between JS and OCB-I ($\hat{\rho}$ = .23, k = 43, N = 12,136) and OCB-O ($\hat{\rho}$ = .37, k = 37, N = 9,789) are from Ilies, Fulmer, Spitzmuller, and Johnson (2009, Table 3). JS and OCB are based on different sources. FFM =five-factor model; OCB = organization citizenship behavior; OCB-O = organization-directed OCB; OCB-I = individual-directed OCB; OCB-CH = change-oriented OCB; CO = Conscientiousness; AG = Agreeableness; ES = Emotional Stability; EX = Extraversion; OP = Openness/Intellect; JS = job satisfaction; β = standardized regression weights; RW = relative weight (J. W. Johnson, 2000); %RW: percentages of relative weights (calculated by dividing individual relative weights by their sum and multiplying by 100); R = multiple correlations; ΔR = incremental change in multiple R.

[a] Computed using the multiple R of CO and AG for each OCB dimensions (.19, .22, and .10 for OCB-O, OCB-I, and OCB-CH, respectively). [b] Computed using the mean true-score correlation ($\hat{\rho}$) of .25 for the relationship between JS and OCB-O (Ilies et al., 2009; k = 37, N = 9,789). [c] Computed using the mean true-score correlation ($\hat{\rho}$) of .23 for the relationship between JS and OCB-I (Ilies et al., 2009; k = 43, N = 12,136). [d] Computed using the mean true-score correlation ($\hat{\rho}$) of .20 for the relationship between JS and OCB-CH (the present study; k = 11, N = 1,843; see the bottom of Table 3).

consistent for other citizenship behavior criteria, with changes in multiple R ranging from .05 for individual-directed citizenship (OCB-I) to .08 for change-oriented citizenship (OCB-CH). The incremental validities of the three predictors were consistent across different dimensions of citizenship used in this study (OCB-I, OCB-O, and OCB-CH), thus supporting our expectation: Emotional Stability, Extraversion, and Openness represent useful additions to the prediction of citizenship behaviors, with most of the incremental validity originating from Openness.

Predicting Citizenship Beyond Job Satisfaction

To estimate the incremental validity of FFM traits over and above job satisfaction,[6] we entered job satisfaction in Step 1, followed by Step 2 including all FFM traits (see Table 4). After controlling for job satisfaction, FFM traits further predicted OCB-O (ΔR = .12), OCB-I (ΔR = .10), and OCB-CH (ΔR = .07): average ΔR = .10. In an alternative model, we estimated the incremental validity of job satisfaction over and above FFM traits for OCB-O (ΔR = .09), OCB-I (ΔR = .06), and OCB-CH (ΔR = .06): average ΔR = .07. These two models (i.e., usefulness analyses) indicated that the predictive power of job satisfaction was lower than that of FFM traits net of each other. Relative weights (see Table 4, Step 2) showed the contribution of job satisfaction (37%–46%) as less than the one of FFM traits (54%–63%). When considered separately, job satisfaction (37%–46%) had the highest relative weight, followed by Openness (22%–28%).

Differential Prediction of Task Performance and OCB

Personality traits should predict citizenship more strongly than they would predict task performance (Motowidlo et al., 1997). We compared the relationships of FFM traits to citizenship and task performance, respectively. We based the comparison on our data and on the true-score correlations from Hurtz and Donovan (2000, Table 4) for the FFM traits predicting task performance. FFM traits are corrected for measurement error using alpha coefficients (see Appendix B), while criteria are corrected using interrater reliability (.53 used in Hurtz & Donovan, 2000; similar to .52 reported in Viswesvaran, Schmidt, & Ones, 2005).[7] Figure 1 presents our results.

[6] As seen at the bottom of Table 4, we conducted a new meta-analysis of the relationship between job satisfaction and OCB-CH because prior meta-analyses did not test this relationship. For the relationships of job satisfaction with OCB-I and OCB-O, we used the effect sizes estimated by Ilies and coauthors (2009); see Table 4's explanatory note for details.

[7] The results ($\hat{\rho}$) we report in Tables 2-4 were corrected for measurement error in both variables using local internal consistency reliability estimates because no primary studies included in the current meta-analysis estimated interrater reliabilities for the criterion (OCB) measures; as discussed, the effect sizes reported are underestimates. In Figure 1, we used the mean interrater reliability estimates of .53 from Hurtz and Donovan (2000) for comparability reasons. Later, we added to Tables 2–4 these results ($\hat{\rho}_{inter}$). Hurtz and Donovan used this same interrater reliability estimate for task performance, interpersonal facilitation, and job dedication.

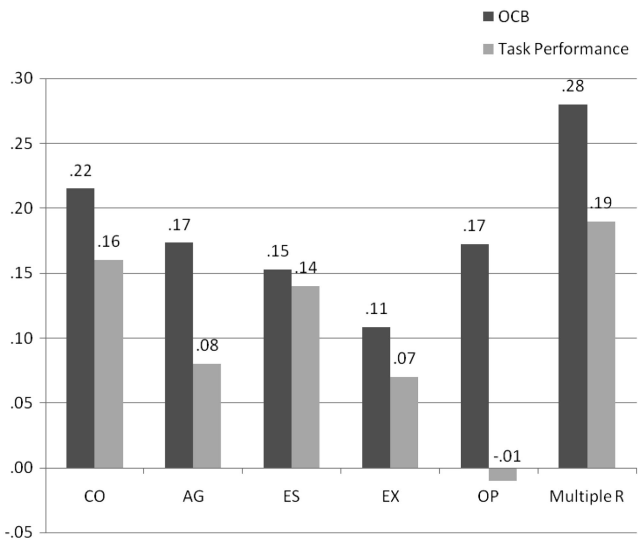

Figure 1. True-score correlations of five-factor model traits to organizational citizenship behaviors (OCBs) and task performance. Effect sizes (true-score correlations) for task performance are from Hurtz and Donovan (2000, Table 4). Effect sizes (true-score correlations) for OCB are computed by correcting mean observed correlations (reported in Table 3) for measurement error in the predictor measure (using the mean reliability estimates reported in Appendix B) and in the criterion measures (using the same interrater reliability estimates of .53 used in Hurtz & Donovan, 2000, instead of local internal consistency reliability estimates; Hurtz and Donovan did not report local internal consistency reliability estimates) to be comparable to the true-score correlations for task performance. CO = Conscientiousness, AG = Agreeableness, ES = Emotional Stability, EX = Extraversion, OP = Openness/Intellect.

As shown by the overlapping 95% confidence intervals presented below, there were no differences for the prediction of task performance and citizenship by Conscientiousness, $\hat{\rho} = .16$ (95% CI [.09, .23]) versus $\hat{\rho} = .22$ (95% CI [.18, .25]); Emotional Stability, $\hat{\rho} = .14$ (95% CI [.10, .18]) versus $\hat{\rho} = .15$ (95% CI [.10, .20]); and Extraversion, $\hat{\rho} = .07$ (95% CI [.02, .12]) versus $\hat{\rho} = .11$ (95% CI [.05, .17]). Conversely, as shown by nonoverlapping confidence intervals, there were differences in how strongly task performance and OCB were predicted by Openness, $\hat{\rho} = -.01$. (95% CI [−.05, .03]) versus $\hat{\rho} = .17$ (95% CI [.13, .22]), and Agreeableness, $\hat{\rho} = .08$ (95% CI [.01, .15]) versus $\hat{\rho} = .17$ (95% CI [.13, .22]). Judging from the overlaps in 95% confidence intervals, the comparison supported differential validities of FFM traits for task performance and citizenship only for Openness and Agreeableness. The combined effects of all FFM traits on OCB and task performance were multiple $R = .28$ versus multiple $R = .19$.

Discussion

When predicting the broadest (aggregated) form of citizenship, Conscientiousness had the largest effect size. Agreeableness and Openness, in addition to Conscientiousness, had credibility intervals excluding zero (validity generalization). In an effort to increase predictive accuracy, we examined to what extent FFM traits differentially predicted these specific forms of citizenship. Such examinations respond to indications that the "OCB literature would currently benefit most from more basic comparisons of OCB based on intended beneficiary of the behavior" (Spitzmuller, Van Dyne, & Ilies, 2007, p. 115). Likewise, the connection of the FFM traits with change-oriented citizenship has not been established meta-analytically, and our study fills an existing gap in this domain.

Although Conscientiousness predicted OCB-O and Agreeableness predicted OCB-I, they did not predict these outcomes better than Openness, thus failing to support the expectation for Conscientiousness and Agreeableness as the best predictors of OCB-O and OCB-I, respectively. Agreeableness and Conscientiousness predicted OCB-O and OCB-I to a similar degree, possibly because both these criteria tap into prosocial motives. Clearer results emerged for Extraversion and Openness: These FFM traits reflecting agency and growth (Digman, 1997) emerged as the best predictors of OCB-CH. As additional evidence for this pattern, the beta factor had nonzero confidence intervals and stronger effect sizes than the other three FFM dimensions in predicting OCB-CH, while the effect sizes connecting Conscientiousness, Agreeableness, and Emotional Stability to OCB-CH were not distinguishable from zero and the credibility intervals were wide.

Importantly, although the patterns of correlations of FFM traits with the prosocial forms of citizenship (OCB-I and OCB-O) are similar, this is not the case for the prediction of change-oriented citizenship (OCB-CH). Specifically, Conscientiousness is roughly half as strongly correlated with OCB-CH as with OCB-I and OCB-O, while Agreeableness is uncorrelated with OCB-CH (despite having small to moderate correlations with OCB-I and OCB-O). Thus, FFM traits do not show a clear pattern in relating to organization- versus individual-directed prosocial citizenship. Conversely, the differences between these prosocial forms of citizenship and change-oriented or proactive forms present a clearer pattern. Thus, the prosocial versus proactive distinction seems more important than other citizenship classification schemes (OCB-I vs. OCB-O), at least in relation to FFM traits. Dalal (2005, p. 1247) also wrote that "the target–referent of behavior may not be as important as often believed" by noting strong relationships between target-based OCB measures.

Interestingly, Openness emerged as an important predictor of multiple types of citizenship. How did Openness come to play such a prominent role? Prior meta-analytic work uncovered lackluster true-score correlations of .05 ($N = 3{,}539$) for interpersonal facilitation and of .01 ($N = 2{,}514$) for job dedication (Hurtz & Donovan, 2000, Table 4). One possible explanation for this discrepancy is the level of criterion specificity used in previous work versus the current meta-analysis. For example, job dedication mostly includes components such as effort, persistence, and commitment to objectives (Hurtz & Donovan, 2000, p. 872), which have less to do with employees' Openness. Conversely, our criteria may capture to a greater extent the context supporting task performance. If citizenship behaviors revolve around contingencies created in the social environment surrounding tasks, employees who are high in Openness may be at an advantage due to their adaptability (LePine, Colquitt, & Erez, 2000), ability to cope with change, and tolerance for ambiguity (Judge, Thoreson, Pucik, & Welbourne, 1999). In addition, engaging in citizenship behaviors requires employees to notice the need to take action, which is

facilitated if individuals have high levels of Openness. People with high levels of Openness engage in continuous learning (London & Smither, 1999), share knowledge (Cabrera, Collins, & Salgado, 2006), are motivated to learn (Major, Turner, & Fletcher, 2006), are more mindful of their social environment (Krasman, 2010), and are more proactive (Fuller & Marler, 2009).

Furthermore, because Openness has the largest correlation (of all the FFM traits) with general mental ability (Judge, Jackson, Shaw, Scott, & Rich, 2007), perhaps high Openness employees understand better the context surrounding the task, resulting in a positive impact on citizenship. Previous cumulative research has also found—in a leadership context—that Openness covaries with dynamic and change-oriented (e.g., idealized influence, inspirational motivation; Bono & Judge, 2004) rather than with maintenance-oriented (e.g., individualized consideration) leader behaviors.[8] In another cumulative review, low Openness was related to authoritarianism and conventionalism (Sibley & Duckitt, 2008). Overall, this pattern of findings points toward the beneficial role of Openness in charge-oriented citizenship, as well as toward the need for more research. As anticipated by researchers who discussed the role of Openness in the literature, "this variable will play an increasingly important role in explaining behavior in a world of work characterized by diversity and rapid change" (Hough, 2003, p. 300).

Predicting Citizenship Over and Above Conscientiousness and Agreeableness

We also investigated the extent to which Conscientiousness and Agreeableness predict citizenship compared to the rest of the FFM traits. Reviews exploring this connection place Conscientiousness and Agreeableness in the forefront (e.g., Hanson & Borman, 2006). Our results show, however, that the other FFM traits are also useful in the prediction of citizenship behaviors. Emotional Stability, Extraversion, and Openness have incremental validity for all three forms of citizenship investigated in this study. Thus, the nomological net of personality correlates of citizenship behaviors should include all of the FFM traits.

The Relative Importance of FFM Traits Versus Job Satisfaction

A long-standing debate in the citizenship literature emphasizes the importance of job satisfaction as a theoretically important and proximal predictor (vs. personality traits) of citizenship (Organ, 1988; Organ & McFall, 2004; Organ & Ryan, 1995). As our results demonstrate, FFM traits predict citizenship outcomes over and above job satisfaction. This finding is important theoretically, as personality traits and individual attitudes may relate to citizenship outcomes through different processes. Likewise, different practical interventions are suggested for personality (e.g., selection) and attitudes (e.g., managerial framing of employees' attitudes; Organ & McFall, 2004). In terms of process models, explanations for the connection between personality traits and performance are based on motives (e.g., Barrick et al., 2002), while job satisfaction may influence citizenship through social exchange and reciprocity (e.g., McNeely & Meglino, 1994). Yet, if FFM traits are equally (or more) predictive of citizenship behaviors than is job satisfaction, research examining psychological processes (other than job satisfaction) transmitting the effect of FFM traits to citizenship would be fruitful.

Differential Prediction of Task Performance and Citizenship

Finally, our study provides additional empirical evidence to theoretical models (Borman & Motowidlo, 1993) and existing arguments indicating that personality is most strongly associated with contextual aspects within the performance domain (Motowidlo et al., 1997). Our comparison (see Figure 1 and its note) reveals some differences for Openness and Agreeableness, where true-score correlations for citizenship were significantly larger than those for task performance (the 95% confidence interval did not overlap). For the other FFM traits, effect sizes do not meaningfully differ across citizenship and task-performance criteria (their 95% confidence intervals overlap, most of them to a considerable extent). Results provide partial support for differential prediction of task performance and citizenship by FFM traits (i.e., Agreeableness and Openness).

Practical Implications

Although organizations typically select employees for their ability to reach requisite levels of task performance, research indicates that citizenship is important for organizational success. Citizenship becomes even more salient in a business context characterized by increased competition, reliance on teamwork, and the threat of downsizing. In such conditions, adaptability, willingness to exhibit extra effort, and initiative are magnified (Borman & Penner, 2001). Additionally, managers take into account their employees' citizenship when rating their performance and distributing rewards (Allen, 2006; Allen & Rush, 1998; Motowidlo & Van Scotter, 1994; Rotundo & Sackett, 2002; Whiting, Podsakoff, & Pierce, 2008).

For selection purposes, practitioners are at an advantage if they have insight into the FFM traits predicting various forms of citizenship. As opposed to task performance (based on job analyses and job specifications), citizenship behaviors may cut across jobs, tasks, and work settings, and researchers suggest that "managers should try to focus on selecting employees with a propensity to engage in OCBs" (N. P. Podsakoff et al., 2009, p. 134). Prior research positioned Conscientiousness among FFM traits as the predictor of choice for task performance (Barrick, Mount, & Judge, 2001), and recent research upheld its value (together with Agreeableness) in the prediction of prosocial citizenship (OCB-O and OCB-I; Ilies et al., 2009). These traditional antecedents remain important for predicting traditional prosocial forms of citizenship, despite the fact that they do not show differential relationships with OCB-O and OCB-I. Adding new information, our study highlights the value of Openness for all forms of citizenship, (prosocial and proactive). Openness, together with Extraversion, was especially important for change-oriented citizenship (OCB-CH). While unique patterns of prediction are more difficult to propose for the good-soldier citizenship, practitioners interested in selecting change agents (Parker et al., 2010) are at advantage if they focus on employees who are open to experience and extraverted.

[8] We thank the anonymous reviewers for this suggestion.

Study Limitations

Even though our meta-analysis advances the existing literature connecting FFM personality traits with citizenship, it has specific limitations. Some boundaries originate from the design used in primary studies: Cause and effect from the FFM traits to citizenship cannot be inferred. It is unlikely though for citizenship behaviors (or behaviors in general) to cause personality traits, which are relatively stable and heritable (e.g., Jang, Livesley, & Vernon, 1996; Loehlin, McCrae, Costa, & John, 1998). Second, the number of primary studies (k) for some relationships was rather small. In particular, it is noted that the number of primary studies used for some results for Extraversion/Openness and/or OCB-CH is relatively small (e.g., $k < 10$) and thus more likely subject to second-order sampling error. Thus, we once again urge the reader to use appropriate levels of caution in interpreting these meta-analytic results.[9]

It is noteworthy that Ployhart (2006, p. 884) argued that previous meta-analyses (e.g., Barrick & Mount, 1991) provided an effective summary of what has been done on the relationships between personality and job performance, "but we may often be interested in questions of what could be done or what should be done." This point coincides with Landy, Shankster, and Kohler (1994, p. 286), who noted that "meta-analysis and traditional research should be *complementary* and not *competitors*" (see also Oh, Wang, & Mount, 2010). Taken together, we hope that this meta-analysis will encourage researchers to conduct more primary studies to examine the role of personality (particularly, Openness) against the expanded criterion domain of OCB (including OCB-CH). As more primary studies are conducted, additional moderators (e.g., job complexity, task interdependence) should be examined to identify the boundary conditions under which the personality to citizenship behavior relationships are further amplified or reduced.

Directions for Future Research

On the basis of these results, future research can develop in several directions. Given the size of the validities obtained in this study, one fruitful route is to explore the relationship between the FFM personality facets and citizenship (Oswald & Hough, 2010). Our weak relationship between Extraversion and citizenship may be explained by studies finding suppression at the facet level. In one study, although Extraversion had no significant relationship with citizenship, its facets (positive emotion and surgency) exhibited significant relationships in positive and negative directions, respectively (Moon, Hollenbeck, Marinova, & Humphrey, 2008). If such patterns are confirmed across traits and studies, the benefits of using FFM facets become clearer.

This may be true especially for Openness, a predictor of all forms of citizenship we investigated. For more precision, one possibility is to separate intellect and nonintellect Openness dimensions (see McCrae, 1994, p. 255). Citizenship engagement can be driven by intellect-based aspects, such as being analytical, intelligent, and perceptive. In a work context, such employees may be more likely to notice constraints around the task and take appropriate action. Employees can also engage in citizenship due to nonintellect aspects (i.e., being original, broad, complex, daring, and independent and preferring variety; McCrae, 1994). Simplifying, does Openness influence change-oriented citizenship because of the perceivers' attentional (depth, scope, and permeability of consciousness) or motivational (need for variety and experience; McCrae & John, 1992) resources? Furthermore, some facets of Openness may be more predictive of citizenship than others. Individuals who prefer forms of Openness capturing external experience (facets such as actions, ideas, and values) may consider citizenship engagement more than people attracted to Openness facets reflecting internal experience (i.e., fantasy, feelings, and aesthetics; Griffin & Hesketh, 2004).

Indeed, from a measurement perspective, it is worth mentioning that Openness can be more (or less) predictive depending on its operationalization. Thus, the true-score correlation for the Openness to OCB-CH relationship was somewhat higher when Openness was measured using a lexical measure, such as the International Personality Item Pool, reflecting intellect ($\hat{\bar{\rho}} = .16$, $SD_\rho = .00$), than when it was measured using questionnaire measures, such as the NEO Personality Inventory—Revised or the NEO Five-Factor Inventory ($\hat{\bar{\rho}} = .09$, $SD_\rho = .09$). Following a similar logic, Pace and Brannick (2010) found, based on a within-subjects design, that Openness contextualized to work settings was more predictive than generic Openness: The observed correlation of work-specific Openness with OCB-CH was higher at .32 ($\alpha = .86$) than that of general Openness with OCB-CH at .09 ($\alpha = .88$).

Our comparison of the relative predictive validity of FFM traits contrasted with job satisfaction may be expanded. On the basis of their earlier research, Organ and colleagues (2006, p. 79) proposed an "*m* factor in work attitudes" (i.e., morale, representing affective commitment, fairness, job satisfaction, and leader consideration). Comparing FFM traits with several dimensions, or with a composite of these dimensions, would generate a more complex picture of this issue. Also, consistent with the emphasis on noncognitive predictors of citizenship (cf. Organ et al., 2006; Spitzmuller et al., 2007), our meta-analytic investigation was limited to personality traits. Yet Openness, one of the citizenship predictors, has a positive association with general mental ability (especially with divergent thinking; McCrae, 1994; McCrae & Costa, 1997). McCrae (1994) argued for a partitioning of intellect- and nonintellect-based dimensions of Openness. It may be productive to consider the validity of both cognitive and noncognitive predictors of citizenship, as called for by researchers (e.g., Goldstein, Zedeck, & Goldstein, 2002) and tested recently (Bergman, Donovan, Drasgow, Overton, & Henning, 2008). If citizenship behaviors are part of the broader nomological network of performance, general mental ability represents a plausible predictor (e.g., McHenry, Hough, Toquam, Hanson, & Ashworth, 1990), and its influence needs to be differentiated from the effect of personality.

As an anonymous reviewer noted, the validities of the FFM traits were moderate at best in the present meta-analysis. However, as Oswald and Hough (2010) argued, "even moderate validities for personality prove to be highly valuable in practice, often incrementing the prediction afforded by ability measures and providing utility across an organizational workforce retained *over time* [emphasis added]" (p. 161), and "a validity coefficient of .20, although seemingly small, translates roughly into a 10% increase in hiring success, a value that many managers view as meaningful" (p. 163).

[9] We thank an anonymous reviewer for this suggestion.

Furthermore, "it is naive to think that all the variance in complex human behavior in the world of work can be fully explained from a handful of personality scales and their bivariate relationships with criterion measures" (Oswald & Hough, 2010, p. 161). Nonetheless, researchers and practitioners have noted design and measurement limitations (advancements) contributing to weak (strong) relationships between FFM traits and citizenship (Oswald & Hough, 2010). Organ and coauthors (2006) stated that "we probably should not consider definitive the findings that show weak effects of personality on OCB" (p. 86), indicating that sample homogeneity, supervisory ratings of citizenship, and self-reports of personality may contribute to the issue. The first aspect is somewhat mitigated in our study, as our primary studies were based on a number of organizations, industries, and locations. In future research, obtaining citizenship ratings from sources other than supervisors (even multirater assessments; Oh & Berry, 2009), collecting personality information other than self-reports (Connelly & Ones, 2010; Oh et al., 2010), and considering nonlinear relationships between personality and citizenship (King, George, & Hebl, 2005; Le et al., 2011) may improve validities.

Finally, it may be advantageous to think beyond the FFM framework (e.g., HEXACO; see Oswald & Hough, 2010). Although only little empirical evidence exists, Honesty-Humility may be meaningfully related to citizenship (mostly OCB-I and OCB-O) given that Honesty-Humility represents "the tendency to be fair and genuine in dealing with others, in the sense of cooperating with others even when one might exploit them" (Ashton & Lee, 2007, p. 156). For OCB-CH, dispositional proactivity, as a "relatively stable tendency to effect environmental change" (Bateman & Crant, 1993, p. 104), may be predictive of proactive behaviors (Fuller & Marler, 2009; Parker et al., 2010; Parker & Collins, 2010; Thomas, Whitman, & Viswesvaran, 2010;) to a greater extent than FFM traits.

Conclusion

Even though the current OCB literature has been mostly interested in prosocial and compliant (or good-soldier) behavior, the original concept of extrarole behaviors emphasizes the importance of change-oriented actions in the form of "innovative and spontaneous behavior" (Katz, 1964, p. 132). As noted by P. M. Podsakoff and coauthors (2000), "the roots of almost every form of citizenship behavior can be traced back to Katz's seminal framework (Katz, 1964)" (p. 526). Through this study, we hope to redirect researchers' attention toward a more inclusive conceptualization of citizenship, including both compliant (prosocial) and change-oriented (proactive) behaviors. Likewise, organizations need to motivate, take into account, and reward both good-soldier and good-change-agent employee actions to prosper.

Cumulative research thus far has connected personality traits with work outcomes, including job performance (e.g., Barrick & Mount, 1991; Barrick et al., 2001), OCB (e.g., Organ & Ryan, 1995), deviance (Berry et al., 2007), and turnover (Zimmerman, 2008). Despite advances in relating personality to citizenship, researchers have lamented that "we are left with an empirical record that is not quite so convincing as we would have hoped in regard to the ability of theoretically accepted personality dimension to predict OCB" (Organ & McFall, 2004, p. 299). They have argued that "we also need more meta-analyses, like that of Hurtz and Donovan (2000), that examine the relationship between personality variables and contextual performance constructs" (Hough & Furnham, 2003, p. 137). In this study, we examined the relationship between the FFM traits and several forms of citizenship, including change-oriented citizenship. We found that all FFM traits except for Extraversion matter for prosocial citizenship forms (OCB-I and OCB-O) to varying degrees, even though in no systematic pattern. We also uncovered Extraversion and Openness as predictors of change-oriented citizenship (OCB-CH). With these findings established, researchers can explore complex aspects, such as relationships at the facet level, and interactions of individual and contextual factors predicting the expanded citizenship criterion domain.

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Appendix A

Comparisons of Estimates From Previous Meta-Analyses With Estimates From the Current Meta-Analysis

Source of meta-analyses/OCB dimensions	CO	AG	ES	EX	OP
Organ & Ryan (1995)					
Altruism	.043 (7, 1,231)				
Generalized compliance	.228 (7, 1,231)				
Hurtz & Donovan (2000)					
Job dedication	.20 (17, 3,197)	.10 (17, 3,197)	.14 (15, 2,581)	.05 (16, 3,130)	.01 (14, 2,514)
Interpersonal facilitation	.18 (23, 4,301)	.20 (23, 4,301)	.17 (21, 3,685)	.11 (21, 4,155)	.05 (19, 3,539)
Borman, Penner, Allen, & Motowidlo (2001)					
Aggregated OCB	.19 (10, 1,963)	.13 (7, 1,554)		.06 (7, 1,728)	
LePine, Erez, & Johnson (2002)					
Global OCB	.23 (3, 848)				
Ilies, Fulmer, Spitzmuller, & Johnson (2009)					
Aggregate OCB (including global OCB)	.19 (21, 4,397)	.14 (18, 5,760)			
OCB-O	.28 (10, 2,509)	.13 (9, 4,063)			
OCB-I	.15 (11, 2,933)	.16 (11, 4,961)			
Current meta-analysis					
Aggregate OCB (including global OCB)	.18 (71, 14,355)	.14 (47, 10,308)	.12 (36, 8,629)	.09 (34, 6,700)	.14 (38, 7,405)
OCB-O	.17 (20, 4,025)	.17 (15, 4,598)	.12 (10, 2,139)	.02 (9, 2,017)	.19 (7, 1,311)
OCB-I	.21 (28, 6,347)	.18 (19, 5,608)	.14 (13, 3,073)	.10 (13, 3,129)	.18 (10, 2,049)
OCB-CH	.10 (17, 2,629)	−.03 (8, 1,396)	.08 (7, 1,732)	.13 (6, 1,144)	.14 (19, 3,761)

Note. All estimates in this table are based on samples using non-self-report criteria; the numbers outside the parentheses represent the corrected validity coefficient, the first number inside the parentheses represents the number of samples (k), the second number inside the parentheses represents total sample size (N). CO = Conscientiousness; AG = Agreeableness; ES = Emotional Stability; EX = Extraversion; OP = Openness/Intellect; OCB = organization citizenship behavior; OCB-O = organization-directed citizenship; OCB-I = individual-directed citizenship; OCB-CH = change-oriented citizenship.

Appendix B

Summary of Artifact Information Used in the Current Meta-Analysis

Variable	$\bar{r}_{xx}$	$\bar{u}_x$	SD	k	N	Source
			Estimated internal consistency reliability (r_{xx})			
FFM trait						
Conscientiousness	.80		.08	69	14,421	Present study
Agreeableness	.76		.08	44	10,308	Present study
Emotional Stability	.81		.07	35	8,696	Present study
Extraversion	.79		.10	31	6,553	Present study
Openness/Intellect	.77		.08	49	10,825	Present study
OCB dimension						
OCB-organizational	.83		.08	34	9,083	Present study
OCB-interpersonal	.86		.07	34	10,110	Present study
OCB-change	.92		.07	30	5,625	Present study
OCB-global	.89		.07	39	8,231	Present study
			Estimated range restriction ratio (u_x)			
Conscientiousness		.92	.04	598	124,502	F. L. Schmidt, Shaffer, & Oh (2008)
Agreeableness		.91	.05	308	54,569	F. L. Schmidt, Shaffer, & Oh (2008)
Emotional Stability		.91	.06	417	67,799	F. L. Schmidt, Shaffer, & Oh (2008)
Extraversion		.92	.03	537	104,527	F. L. Schmidt, Shaffer, & Oh (2008)
Openness/Intellect		.91	.04	208	37,199	F. L. Schmidt, Shaffer, & Oh (2008)

Note. $\bar{u}_x$ is the mean of meta-analytic u_x (= restricted [incumbent] SD/unrestricted [applicant] SD) values across 5–6 meta-analyses (see F. L. Schmidt et al., 2008, Table 1 and Appendices B and C, for more details). FFM = five-factor model; OCB = organizational citizenship behavior.

(*Appendices continue*)

Appendix C

Meta-Analysis Results for Global OCB

FFM trait	k	N	$\bar{r}$	SD_r	$\hat{\bar{\rho}}$	$\hat{\bar{\rho}}_{inter}$	SD_ρ	%Var	CV_{LL}	CV_{UL}	CI_{LL}	CI_{UL}
Conscientiousness	30	6,233	.15	.11	.19	.23	.11	37	.05	.33	.14	.24
Agreeableness	22	3,875	.10	.12	.14	.16	.12	39	−.02	.29	.07	.20
Emotional Stability	18	4,303	.11	.13	.14	.17	.15	23	−.04	.33	.07	.22
Extraversion	16	2,870	.05	.13	.07	.08	.13	34	−.10	.23	−.01	.14
Openness/Intellect	11	2,185	.08	.10	.11	.13	.08	54	.00	.21	.04	.17

Note. Each independent sample counted only once for each meta-analytic result/relationship. There is no overlap between the studies used here and those used in Table 3. OCB = organizational citizenship behavior; global OCB = contextual performance or generic/overall OCB without reporting specific OCB dimensions/behaviors; FFM = five-factor model; k = number of statistically independent samples; N = total sample size; $\bar{r}$ = sample-size-weighted mean observed (uncorrected) correlation; SD_r = sample-size-weighted observed standard deviation of correlations; $\hat{\bar{\rho}}$ = mean true-score correlation corrected for unreliability (using local coefficients alpha for both variables) and range restriction; $\hat{\bar{\rho}}_{inter}$ = mean true-score correlation corrected for unreliability (using local coefficients alpha for FFM traits and a meta-analytic inter-rater reliability of .53 for OCB; Hurtz & Donovan, 2000) and predictor range restriction; SD_ρ = standard deviation of corrected correlations; %Var = percentage of variance attributable to statistical artifacts; CV_{LL} and CV_{UL} = lower and upper bounds, respectively, of the 80% credibility interval; CI_{LL} and CI_{UL} = lower and upper bounds, respectively, of the 95% confidence interval around the corrected mean correlation.

Appendix D

Main Codes and Input Values for the Primary Studies Included in the Meta-Analysis

Source	FFM trait/JS/OCB dimension	OCB/task performance	n	r	r_{xx}	r_{yy}
Allen, Facteau, & Facteau (2004)	CO	OCB-CH	172	.28	.85	.77
Allworth & Hesketh (1999)	AG	OCB-CH	169	−.10	.76	.93
Allworth & Hesketh (1999)	CO	OCB-CH	169	.04	.80	.93
Allworth & Hesketh (1999)	ES	OCB-CH	169	−.02	.81	.93
Allworth & Hesketh (1999)	EX	OCB-CH	169	.04	.79	.93
Allworth & Hesketh (1999)	OP	OCB-CH	169	.10	.77	.93
Avis (2001)[a]	AG	Global OCB	173	.20	.68	.96
Avis (2001)[a]	CO	Global OCB	173	.16	.90	.96
Avis (2001)[a]	ES	Global OCB	173	.20	.86	.96
Avis (2001)[a]	EX	Global OCB	173	.24	.77	.96
Avis (2001)[a]	OP	Global OCB	173	.11	.73	.96
Avis, Kudisch, & Fortunato (2002)	CO	Global OCB	367	.32	.80	.97
Baer (2010)	OP	OCB-CH	216	.24	.85	.93
Baer & Oldham (2006)	OP	OCB-CH	161	.00	.72	.98
Baker (2005)[a]	AG	Global OCB	139	.10	.67	.89
Baker (2005)[a]	CO	Global OCB	139	.11	.67	.89
Blickle, Momm, Schneider, Gansen, & Kramer (2009, Sample 1)	CO	Global OCB	54	−.02	.58	.71
Blickle, Momm, Schneider, Gansen, & Kramer (2009, Sample 2)	CO	Global OCB	42	.26	.51	.84
Cellar, DeGrendel, Klawsky, & Miller (1996)	AG	OCB-I	424	.18	.78	.94
Cellar, DeGrendel, Klawsky, & Miller (1996)	CO	OCB-I	424	.09	.85	.94
Cellar, DeGrendel, Klawsky, & Miller (1996)	ES	OCB-I	424	.12	.84	.94
Cellar, DeGrendel, Klawsky, & Miller (1996)	EX	OCB-I	424	.16	.72	.94
Cellar, DeGrendel, Klawsky, & Miller (1996)	OP	OCB-I	424	.15	.71	.94
Chan & Schmitt (2002)	AG	OCB-I	160	.23	.67	.76
Chan & Schmitt (2002)	AG	OCB-O	160	.11	.67	.78
Chan & Schmitt (2002)	CO	OCB-I	160	.07	.81	.76
Chan & Schmitt (2002)	CO	OCB-O	160	.26	.81	.78
Chan & Schmitt (2002)	ES	OCB-I	160	.26	.87	.76
Chan & Schmitt (2002)	ES	OCB-O	160	.14	.87	.78

(*Appendices continue*)

Appendix D (*continued*)

Source	FFM trait/JS/OCB dimension	OCB/task performance	n	r	r_{xx}	r_{yy}
Chan & Schmitt (2002)	EX	OCB-I	160	.37	.84	.76
Chan & Schmitt (2002)	EX	OCB-O	160	.13	.84	.78
Chan & Schmitt (2002)	OP	OCB-I	160	.33	.69	.76
Chan & Schmitt (2002)	OP	OCB-O	160	.20	.69	.78
Chandler (2004)[a]	CO	&OCB-I	146	.02	.65	.88
Chandler (2004)[a]	CO	&OCB-O	146	.04	.65	.89
Côté & Miners (2006)	AG	OCB-I	175	.10	.75	.91
Côté & Miners (2006)	AG	OCB-O	175	.21	.75	.94
Côté & Miners (2006)	CO	OCB-I	175	−.08	.78	.91
Côté & Miners (2006)	CO	OCB-O	175	.04	.78	.94
Côté & Miners (2006)	ES	OCB-I	175	.03	.90	.91
Côté & Miners (2006)	ES	OCB-O	175	.08	.90	.94
Côté & Miners (2006)	EX	OCB-I	175	.13	.87	.91
Côté & Miners (2006)	EX	OCB-O	175	.22	.87	.94
Côté & Miners (2006)	OP	OCB-I	175	−.01	.70	.91
Côté & Miners (2006)	OP	OCB-O	175	.15	.70	.94
Deluga (1998)	CO	Global OCB	127	.01	.81	.94
Dewett (2002)[a]	OP	OCB-CH	282	.19	.69	.96
Diefendorff, Brown, Kamin, & Lord (2002)	AG	&OCB-I	130	.07	.91	.86
Diefendorff, Brown, Kamin, & Lord (2002)	AG	&OCB-O	130	−.04	.91	.84
Diefendorff, Brown, Kamin, & Lord (2002)	CO	&OCB-I	130	.01	.92	.86
Diefendorff, Brown, Kamin, & Lord (2002)	CO	&OCB-O	130	.14	.92	.84
Draves (2003)[a]	CO	OCB-I	136	.15	.85	.90
Draves (2003)[a]	CO	OCB-O	136	.23	.85	.93
Ferris, Witt, & Hochwarter (2001)	AG	OCB-I	106	.15	.81	.89
Ferris, Witt, & Hochwarter (2001)	AG	OCB-O	106	−.02	.81	.84
Ferris, Witt, & Hochwarter (2001)	CO	OCB-I	106	.12	.81	.89
Ferris, Witt, & Hochwarteret (2001)	CO	OCB-O	106	.02	.81	.84
Ferris, Witt, & Hochwarter (2001)	ES	OCB-I	106	.02	.85	.89
Ferris, Witt, & Hochwarter (2001)	ES	OCB-O	106	−.04	.85	.84
Ferris, Witt, & Hochwarter (2001)	EX	OCB-I	106	−.05	.88	.89
Ferris, Witt, & Hochwarter (2001)	EX	OCB-O	106	.01	.88	.84
Ferris, Witt, & Hochwarter (2001)	OP	OCB-I	106	−.01	.77	.89
Ferris, Witt, & Hochwarter (2001)	OP	OCB-O	106	.00	.77	.84
Gebbia (1999)[a]	AG	&OCB-O	159	.12	.83	.84
Gebbia (1999)[a]	AG	OCB-CH	159	.20	.83	.79
Gebbia (1999)[a]	AG	OCB-I	159	.20	.83	.82
Gebbia (1999)[a]	CO	&OCB-O	159	.15	.81	.84
Gebbia (1999)[a]	CO	OCB-CH	159	.06	.81	.79
Gebbia (1999)[a]	CO	OCB-I	159	.16	.81	.82
Gellatly & Irving (2001)	AG	Global OCB	79	.10	.63	.81
Gellatly & Irving (2001)	CO	Global OCB	79	−.13	.82	.81
Gellatly & Irving (2001)	EX	Global OCB	79	.20	.80	.81
George & Zhou (2001)	CO	OCB-CH	149	−.03	.81	.96
George & Zhou (2001)	OP	OCB-CH	149	.02	.69	.96
Gong, Cheung, Wang, & Huang (in press)	OP	OCB-CH	190	−.08	.77	.96
Grandmaison (2006)[a]	AG	Global OCB	215	.06	.80	.89
Grandmaison (2006)[a]	CO	Global OCB	215	−.10	.83	.89
Grandmaison (2006)[a]	ES	Global OCB	215	.00	.85	.89
Grandmaison (2006)[a]	EX	Global OCB	215	.10	.87	.89
Grandmaison (2006)[a]	OP	Global OCB	215	.01	.79	.89
Grant & Berry (2011, Sample 1)	CO	OCB-CH	90	.06	.75	.97
Grant & Berry (2011, Sample 1)	OP	OCB-CH	90	.07	.77	.97
Grant & Berry (2011, Sample 2)	CO	OCB-CH	111	.17	.79	.97
Grant & Berry (2011, Sample 2)	OP	OCB-CH	111	.13	.78	.97
Grant & Wrzesniewski (2010)	AG	OCB-CH	93	.04	.80	.84
Greguras & Diefendorff (2010)	AG	Global OCB	154	.28	.71	.90
Greguras & Diefendorff (2010)	CO	Global OCB	154	.15	.80	.90
Greguras & Diefendorff (2010)	ES	Global OCB	154	.09	.75	.90
Greguras & Diefendorff (2010)	EX	Global OCB	154	.02	.74	.90
Greguras & Diefendorff (2010)	OP	Global OCB	154	.02	.73	.90

(*Appendices continue*)

Appendix D (*continued*)

Source	FFM trait/JS/OCB dimension	OCB/task performance	n	r	r_{xx}	r_{yy}
Griffin & Hesketh (2003, Sample 1)	OP	OCB-CH	187	−.01	.87	.97
Griffin & Hesketh (2003, Sample 2)	OP	OCB-CH	70	.28	.89	.98
Griffin & Hesketh (2005, Sample 1)	CO	OCB-CH	116	.06	.87	.97
Griffin & Hesketh (2005, Sample 2)	CO	OCB-CH	55	.05	.92	.98
Griffin & Hesketh (2005, Sample 3)	CO	OCB-CH	131	−.03	.91	.97
Grim (2010, Sample 1)[a]	AG	OCB-CH	101	.16	.77	.98
Grim (2010, Sample 1)[a]	CO	OCB-CH	101	.34	.77	.98
Grim (2010, Sample 1)[a]	ES	OCB-CH	101	.30	.77	.98
Grim (2010, Sample 1)[a]	EX	OCB-CH	101	.16	.77	.98
Grim (2010, Sample 1)[a]	OP	OCB-CH	101	.09	.77	.98
Grim (2010, Sample 2)[a]	AG	OCB-CH	67	−.03	.77	.98
Grim (2010, Sample 2)[a]	CO	OCB-CH	67	.18	.77	.98
Grim (2010, Sample 2)[a]	ES	OCB-CH	67	.35	.77	.98
Grim (2010, Sample 2)[a]	EX	OCB-CH	67	.14	.77	.98
Grim (2010, Sample 2)[a]	OP	OCB-CH	67	.07	.77	.98
Gutkowski (1997)[a]	AG	Global OCB	295	−.13	.77	.84
Gutkowski (1997)[a]	CO	Global OCB	295	.07	.86	.84
Gutkowski (1997)[a]	ES	Global OCB	295	.03	.85	.84
Gutkowski (1997)[a]	EX	Global OCB	295	.04	.76	.84
Halbesleben, Harvey, & Bolino (2009, Sample 1)	CO	OCB-I	80	.48	.89	.91
Halbesleben, Harvey, & Bolino (2009, Sample 2)	CO	OCB-I	513	.42	.74	.85
Han (2003)[a]	CO	OCB-CH	134	.13	.80	.96
Hattrup, O'Connell, & Wingate (1998)	CO	Global OCB	103	.23	.70	.89
Hense (2001)[a]	AG	Global OCB	152	.13	.80	.85
Hense (2001)[a]	CO	Global OCB	152	.20	.80	.85
Hense (2001)[a]	ES	Global OCB	152	.06	.85	.85
Hense (2001)[a]	EX	Global OCB	152	.16	.76	.85
Hense (2001)[a]	OP	Global OCB	152	−.08	.75	.85
Jiang, Wang, & Zhou (2009)	AG	Global OCB	478	.07	.80	.81
Jiang, Wang, & Zhou (2009)	CO	Global OCB	478	.15	.83	.81
A. Johnson (2008)[a]	AG	OCB-I	1777	.15	.76	.86
A. Johnson (2008)[a]	AG	OCB-O	1777	.13	.76	.83
Judge, LePine, & Rich (2006)	AG	Global OCB	143	.06	.82	.94
Judge, LePine, & Rich (2006)	CO	Global OCB	143	.14	.80	.94
Judge, LePine, & Rich (2006)	ES	Global OCB	143	.16	.81	.94
Judge, LePine, & Rich (2006)	EX	Global OCB	143	.04	.85	.94
Judge, LePine, & Rich (2006)	OP	Global OCB	143	.10	.83	.94
Keller-Glaze (2001)[a]	CO	&OCB-I	105	−.11	.92	.91
Keller-Glaze (2001)[a]	CO	&OCB-O	105	−.01	.92	.87
King, George, & Hebl (2005)	AG	OCB-I	374	.11	.72	.86
King, George, & Hebl (2005)	CO	OCB-I	374	.07	.80	.86
King, George, & Hebl (2005)	ES	OCB-I	374	.08	.80	.86
King, George, & Hebl (2005)	EX	OCB-I	374	.18	.77	.86
Konovsky & Organ (1996)	AG	&OCB-I	402	.07	.82	.89
Konovsky & Organ (1996)	AG	&OCB-O	402	.08	.82	.84
Konovsky & Organ (1996)	CO	&OCB-I	402	.08	.83	.89
Konovsky & Organ (1996)	CO	&OCB-O	402	.09	.83	.84
Kraus (2002)[a]	AG	Global OCB	95	.01	.62	.96
Kraus (2002)[a]	CO	Global OCB	95	.10	.78	.96
Kraus (2002)[a]	ES	Global OCB	95	.15	.81	.96
Kraus (2002)[a]	EX	Global OCB	95	.10	.88	.96
Kraus (2002)[a]	OP	Global OCB	95	.07	.76	.96
Krautheim (1997)[a]	AG	Global OCB	124	.08	.84	.90
Ladd & Henry (2000)	CO	OCB-I	214	.26	.92	.93
Ladd & Henry (2000)	CO	OCB-O	214	.17	.92	.81
Le et al. (2011, Sample 1)	CO	Global OCB	569	.24	.81	.95
Le et al. (2011, Sample 1)	ES	Global OCB	569	.24	.81	.95
Le et al. (2011, Sample 2)	CO	Global OCB	925	.10	.90	.94
Le et al. (2011, Sample 2)	ES	Global OCB	925	.08	.86	.94

(*Appendices continue*)

Appendix D (*continued*)

Source	FFM trait/JS/OCB dimension	OCB/task performance	*n*	*r*	r_{xx}	r_{yy}
S.-H. Lee (2000)[a]	AG	Global OCB	315	.02	.82	.87
S.-H. Lee (2000)[a]	CO	Global OCB	315	.24	.90	.87
S.-H. Lee (2000)[a]	ES	Global OCB	315	−.09	.89	.87
S.-H. Lee (2000)[a]	EX	Global OCB	315	.01	.89	.87
S.-H. Lee (2000)[a]	OP	Global OCB	315	.08	.84	.87
Y.-H. Lee, Yang, Wan, & Chen (2010)	CO	OCB-I	505	.16	.76	.86
Liao (2002)[a]	CO	&OCB-I	269	.37	.76	.72
Liao (2002)[a]	CO	&OCB-O	269	.17	.76	.74
Madjar (2008)	OP	OCB-CH	282	.15	.66	.96
Mann (2007)[a]	CO	Global OCB	107	.13	.70	.86
McManus & Kelly (1999)	AG	Global OCB	116	.20	.77	.84
McManus & Kelly (1999)	CO	Global OCB	116	.02	.83	.84
McManus & Kelly (1999)	ES	Global OCB	116	.23	.70	.84
McManus & Kelly (1999)	EX	Global OCB	116	.29	.80	.84
Moon, Kamdar, Mayer, & Takeuchi (2008, Sample 1)	CO	&OCB-CH	253	−.04	.84	.92
Moon, Kamdar, Mayer, & Takeuchi (2008, Sample 2)	CO	OCB-CH	115	−.11	.80	.94
Morgeson, Reider, & Campion (2005)	AG	Global OCB	90	.18	.82	.98
Morgeson, Reider, & Campion (2005)	CO	Global OCB	90	.21	.87	.98
Morgeson, Reider, & Campion (2005)	ES	Global OCB	90	.17	.86	.98
Morgeson, Reider, & Campion (2005)	EX	Global OCB	90	.21	.86	.98
Mount, Oh, & Burns (2008)	AG	Global OCB	133	.08	.82	.80
Mount, Oh, & Burns (2008)	CO	Global OCB	133	.18	.87	.80
Mount, Oh, & Burns (2008)	ES	Global OCB	133	−.10	.86	.80
Mount, Oh, & Burns (2008)	EX	Global OCB	133	−.11	.81	.80
Mount, Oh, & Burns (2008)	OP	Global OCB	133	−.09	.83	.80
Neuman & Kickul (1998)	AG	&OCB-I	284	.23	.87	.76
Neuman & Kickul (1998)	AG	&OCB-O	284	.28	.87	.80
Neuman & Kickul (1998)	CO	&OCB-I	284	.32	.91	.76
Neuman & Kickul (1998)	CO	&OCB-O	284	.32	.91	.80
Neuman & Kickul (1998)	EX	&OCB-I	284	−.10	.94	.76
Neuman & Kickul (1998)	EX	&OCB-O	284	−.11	.94	.80
Nikolaou & Robertson (2001)	AG	OCB-I	227	.03	.67	.90
Nikolaou & Robertson (2001)	AG	OCB-O	227	−.04	.67	.71
Nikolaou & Robertson (2001)	CO	OCB-I	227	.09	.85	.90
Nikolaou & Robertson (2001)	CO	OCB-O	227	.09	.85	.71
Nikolaou & Robertson (2001)	ES	OCB-I	227	−.03	.85	.90
Nikolaou & Robertson (2001)	ES	OCB-O	227	−.11	.85	.71
Nikolaou & Robertson (2001)	EX	OCB-I	227	−.11	.83	.90
Nikolaou & Robertson (2001)	EX	OCB-O	227	−.09	.83	.71
Nikolaou & Robertson (2001)	OP	OCB-I	227	.07	.70	.90
Nikolaou & Robertson (2001)	OP	OCB-O	227	.10	.70	.71
Norris (2002, Sample 1)[a]	AG	Global OCB	66	.24	.78	.86
Norris (2002, Sample 1)[a]	CO	Global OCB	66	−.20	.80	.86
Norris (2002, Sample 1)[a]	ES	Global OCB	66	.00	.83	.86
Norris (2002, Sample 2)[a]	AG	Global OCB	57	.25	.78	.86
Norris (2002, Sample 2)[a]	CO	Global OCB	57	.02	.80	.86
Norris (2002, Sample 2)[a]	ES	Global OCB	57	.32	.83	.86
O'Brien & Allen (2008)	CO	OCB-I	334	.12	.84	.91
O'Brien & Allen (2008)	CO	OCB-O	334	.08	.84	.92
O'Connell, Doverspike, Norris-Watts, & Hattrup (2001)	CO	Global OCB	112	.35	.83	.79
Oh & Berry (2009)	AG	& Global OCB	277	.10	.92	.91
Oh & Berry (2009)	CO	& Global OCB	277	.12	.92	.91
Oh & Berry (2009)	ES	& Global OCB	277	.14	.93	.91
Oh & Berry (2009)	EX	& Global OCB	277	.14	.95	.91
Oh & Berry (2009)	OP	& Global OCB	277	.09	.94	.91
Oh et al. (2009)[a]	AG	OCB-I	113	.26	.75	.90
Oh et al. (2009)[a]	AG	OCB-O	113	.17	.75	.88
Oh et al. (2009)[a]	CO	OCB-I	113	.21	.86	.90

(*Appendices continue*)

Appendix D (*continued*)

Source	FFM trait/JS/OCB dimension	OCB/task performance	*n*	*r*	r_{xx}	r_{yy}
Oh et al. (2009)[a]	CO	OCB-O	113	.20	.86	.88
Oh et al. (2009)[a]	ES	OCB-I	113	.09	.84	.90
Oh et al. (2009)[a]	ES	OCB-O	113	.11	.84	.88
Oh et al. (2009)[a]	EX	OCB-I	113	.06	.81	.90
Oh et al. (2009)[a]	EX	OCB-O	113	.01	.81	.88
Oh et al. (2009)[a]	OP	OCB-I	113	.04	.79	.90
Oh et al. (2009)[a]	OP	OCB-O	113	.08	.79	.88
Oh, Le, Yoo, & Kim (2006)[a]	AG	OCB-CH	217	−.02	.70	.91
Oh, Le, Yoo, & Kim (2006)[a]	CO	OCB-CH	217	.16	.70	.91
Oh, Le, Yoo, & Kim (2006)[a]	ES	OCB-CH	217	.09	.82	.91
Oh, Le, Yoo, & Kim (2006)[a]	EX	OCB-CH	217	.04	.79	.91
Oh, Le, Yoo, & Kim (2006)[a]	OP	OCB-CH	217	−.04	.74	.91
Otalora (2006)[a]	AG	&OCB-I	228	.04	.78	.83
Otalora (2006)[a]	AG	&OCB-O	228	.05	.78	.76
Otalora (2006)[a]	CO	&OCB-I	228	−.01	.77	.83
Otalora (2006)[a]	CO	&OCB-O	228	.05	.77	.76
Otalora (2006)[a]	ES	&OCB-I	228	−.03	.86	.83
Otalora (2006)[a]	ES	&OCB-O	228	.05	.86	.76
Pace & Brannick (2010)	OP	&OCB-CH	83	.21	.87	.92
Piedmont & Weinstein (1994)	AG	OCB-CH	207	−.14	.76	.85
Piedmont & Weinstein (1994)	AG	OCB-I	207	.07	.76	.80
Piedmont & Weinstein (1994)	CO	OCB-CH	207	.21	.80	.85
Piedmont & Weinstein (1994)	CO	OCB-I	207	.19	.80	.80
Piedmont & Weinstein (1994)	ES	OCB-CH	207	.17	.81	.85
Piedmont & Weinstein (1994)	ES	OCB-I	207	.16	.81	.80
Piedmont & Weinstein (1994)	EX	OCB-CH	207	.19	.79	.85
Piedmont & Weinstein (1994)	EX	OCB-I	207	.20	.79	.80
Piedmont & Weinstein (1994)	OP	OCB-CH	207	.07	.77	.85
Piedmont & Weinstein (1994)	OP	OCB-I	207	.07	.77	.80
Pulakos et al. (2002)	ES	OCB-CH	588	.00	.80	.97
Pulakos et al. (2002)	OP	OCB-CH	588	.12	.83	.97
Radwinsky (1999)[a]	AG	OCB-O	178	.42	.78	.86
Radwinsky (1999)[a]	CO	OCB-O	178	.02	.72	.86
Radwinsky (1999)[a]	ES	OCB-O	178	.32	.86	.86
Raja (2004)[a]	AG	&OCB-CH	383	−.09	.70	.82
Raja (2004)[a]	AG	OCB-I	383	.06	.70	.76
Raja (2004)[a]	AG	OCB-O	383	.03	.70	.70
Raja (2004)[a]	CO	&OCB-CH	383	.02	.72	.82
Raja (2004)[a]	CO	OCB-I	383	.12	.72	.76
Raja (2004)[a]	CO	OCB-O	383	.13	.72	.70
Raja (2004)[a]	ES	&OCB-CH	383	.02	.70	.82
Raja (2004)[a]	ES	OCB-I	383	.09	.70	.76
Raja (2004)[a]	ES	OCB-O	383	.02	.70	.70
Raja (2004)[a]	EX	&OCB-CH	383	.08	.69	.82
Raja (2004)[a]	EX	OCBI	383	.05	.69	.76
Raja (2004)[a]	EX	OCB-O	383	.03	.69	.70
Raja (2004)[a]	OP	&OCB-CH	383	.12	.72	.82
Raja (2004)[a]	OP	OCB-I	383	.17	.72	.76
Raja (2004)[a]	OP	OCB-O	383	.10	.72	.70
Richards & Schat (in press)	AG	OCB-I	147	.36	.70	.95
Richards & Schat (in press)	AG	OCB-O	147	.35	.70	.79
Richards & Schat (in press)	CO	OCB-I	147	.24	.69	.95
Richards & Schat (in press)	CO	OCB-O	147	.29	.69	.79
Richards & Schat (in press)	ES	OCB-I	147	.21	.56	.95
Richards & Schat (in press)	ES	OCB-O	147	.21	.56	.79
Richards & Schat (in press)	EX	OCB-I	147	.16	.64	.95
Richards & Schat (in press)	EX	OCB-O	147	.16	.64	.79
Richards & Schat (in press)	OP	OCB-I	147	.28	.64	.95
Richards & Schat (in press)	OP	OCB-O	147	.32	.64	.79
Rogg (1997)[a]	CO	OCB-I	214	.44	.77	.72

(*Appendices continue*)

Appendix D (*continued*)

Source	FFM trait/JS/OCB dimension	OCB/task performance	*n*	*r*	r_{xx}	r_{yy}
J. Schmidt (2008)[a]	AG	Global OCB	432	.30	.76	.93
J. Schmidt (2008)[a]	CO	Global OCB	432	.23	.75	.93
J. Schmidt (2008)[a]	ES	Global OCB	432	.33	.70	.93
J. Schmidt (2008)[a]	EX	Global OCB	432	−.15	.80	.93
J. Schmidt (2008)[a]	OP	Global OCB	432	.24	.78	.93
Sears (2005)[a]	AG	Global OCB	141	.12	.80	.94
Smith, Organ, & Near (1983)	ES	OCB-I	422	.19	.68	.91
Smith, Organ, & Near (1983)	ES	OCB-O	422	.13	.68	.81
Smith, Organ, & Near (1983)	EX	OCB-I	422	−.07	.44	.91
Smith, Organ, & Near (1983)	EX	OCB-O	422	−.05	.44	.81
Steffensmeier (2008)[a]	AG	OCB-I	129	.01	.61	.93
Steffensmeier (2008)[a]	AG	OCB-O	129	−.17	.61	.93
Steffensmeier (2008)[a]	CO	OCB-I	129	.10	.73	.93
Steffensmeier (2008)[a]	CO	OCB-O	129	−.07	.73	.93
Stewart & Carson (1995)	AG	Global OCB	105	−.17	.65	.89
Stewart & Carson (1995)	CO	Global OCB	105	.05	.75	.89
Stewart & Carson (1995)	EX	Global OCB	105	.12	.75	.89
Taylor, Kluemper, & Mossholder (2010)	AG	OCB-I	107	.24	.73	.86
Taylor, Kluemper, & Mossholder (2010)	CO	OCB-I	107	.05	.87	.86
Taylor, Kluemper, & Mossholder (2010)	ES	OCB-I	107	.21	.78	.86
Taylor, Kluemper, & Mossholder (2010)	EX	OCB-I	107	.07	.72	.86
Taylor, Kluemper, & Mossholder (2010)	OP	OCB-I	107	.16	.64	.86
Venkataramani & Dalal (2007)	AG	OCB-I	76	−.02	.89	.86
Venkataramani & Dalal (2007)	CO	OCB-I	76	−.02	.85	.86
M. Williams (1999)[a]	AG	Global OCB	96	.00	.68	.97
M. Williams (1999)[a]	CO	Global OCB	96	.01	.81	.97
M. Williams (1999)[a]	ES	Global OCB	96	−.23	.86	.97
M. Williams (1999)[a]	EX	Global OCB	96	−.12	.77	.97
M. Williams (1999)[a]	OP	Global OCB	96	.05	.73	.97
S. Williams (2004)	OP	OCB-CH	208	.27	.83	.80
Blakely, Andrews, & Fuller (2003)	JS	&OCB-CH	155	.04	.80	.90
Detert & Burris (2007)	JS	&OCB-CH	335	.19	.70	.88
Fellenz (1996)[a]	JS	OCB-CH	195	.36	.91	.96
Galperin & Burke (2006)	JS	&OCB-CH	142	.18	.74	.77
Gebbia (1999)[a]	JS	OCB-CH	159	.19	.91	.79
Janssen & Van Yperen (2004)	JS	&OCB-CH	170	.09	.86	.92
Mayhew, Ashkanasy, Bramble, & Gardner (2007)	JS	OCB-CH	70	.21	.82	.95
Methot, LePine, & Rich (2009)[a]	JS	OCB-CH	165	.10	.86	.95
Van Dyne, Graham, & Dienesch (1994)	JS	OCB-CH	154	.20	.74	.86
Vigoda (2001)	JS	OCB-CH	149	.20	.85	.84
Zhou & George (2001)	JS	OCB-CH	149	.11	.86	.96
Alge, Ballinger, Tangirala, & Oakley (2006)	OCB-CH	OCB-I	286	.45	.88	.91
Alge, Ballinger, Tangirala, & Oakley (2006)	OCB-CH	OCB-O	286	.40	.88	.84
Bagozzi, Verbeke, & Gavino (2003)	OCB-CH	&Task	247	.30	.82	.85
Bagozzi, Verbeke, & Gavino (2003)	OCB-CH	OCB-I	247	−.28	.82	.72
Bagozzi, Verbeke, & Gavino (2003)	OCB-CH	OCB-O	247	.23	.82	.66
Binnewies, Sonnentag, & Mojza (2009)	OCB-CH	OCB-I	99	.44	.86	.85
Binnewies, Sonnentag, & Mojza (2009)	OCB-CH	Task	99	.34	.86	.77
Blakely, Andrews, & Fuller (2003)	OCB-CH	&OCB-I	155	.69	.90	.91
Blakely, Andrews, & Fuller (2003)	OCB-CH	&OCB-O	155	.59	.88	.85
Blakely, Andrews, & Moorman (2005)	OCB-CH	&OCB-O	108	.70	.84	.81
Blakely, Andrews, & Moorman (2005)	OCB-CH	OCB-I	108	.77	.84	.86
Bledow & Frese (2009)	OCB-CH	OCB-I	77	.50	.84	.89
Bledow & Frese (2009)	OCB-CH	OCB-O	77	.53	.84	.81
Bledow & Frese (2009)	OCB-CH	Task	77	.72	.84	.96
Burris & Detert (2009)[a]	OCB-CH	&Task	7539	.23	.92	.88

(*Appendices continue*)

Appendix D (*continued*)

Source	FFM trait/JS/OCB dimension	OCB/task performance	n	r	r_{xx}	r_{yy}
Chiaburu & Baker (2006)	OCB-CH	OCB-I	221	.43	.90	.90
Chiaburu & Baker (2006)	OCB-CH	OCB-O	221	.38	.90	.90
Chiaburu & Baker (2006)	OCB-CH	Task	221	.30	.90	.90
Cirka (2000)[a]	OCB-CH	OCB-I	138	.64	.86	.90
Cirka (2000)[a]	OCB-CH	Task	138	.49	.86	.93
Coyle-Shapiro (2002)	OCB-CH	&OCB-O	480	.37	.81	.74
Coyle-Shapiro (2002)	OCB-CH	OCB-I	480	.49	.81	.80
Daly (1998)[a]	OCB-CH	&OCB-O	240	.61	.85	.86
Daly (1998)[a]	OCB-CH	OCB-I	240	.67	.85	.91
Deckop, Cirka, & Andersson (2003)	OCB-CH	OCB-I	157	.62	.86	.90
Deckop, Cirka, & Andersson (2003)	OCB-CH	Task	157	.53	.86	.93
deJong & de Ruyter (2004)	OCB-CH	&Task	809	.23	.89	.88
Farh, Hackett, & Liang (2007)	OCB-CH	OCB-I	163	.55	.84	.75
Farh, Hackett, & Liang (2007)	OCB-CH	OCB-O	163	.48	.84	.83
Farh, Hackett, & Liang (2007)	OCB-CH	Task	163	.53	.84	.84
Fischer & Smith (2006, German Sample)	OCB-CH	OCB-O	128	.10	.80	.75
Fischer & Smith (2006, U.K. sample)	OCB-CH	OCB-O	184	.30	.70	.82
Gebbia (1999)[a]	OCB-CH	&OCB-O	159	.59	.79	.84
Gebbia (1999)[a]	OCB-CH	OCB-I	159	.65	.79	.82
Gebbia (1999)[a]	OCB-CH	Task	159	.47	.79	.87
Grant, Parker, & Collins (2009)	OCB-CH	&Task	103	.50	.84	.85
Hatcher, Ross, & Collins (1989)	OCB-CH	OCB-I	100	.22	.92	.85
Hatcher, Ross, & Collins (1989)	OCB-CH	OCB-O	100	−.07	.92	.86
A. Johnson (2008)[a]	OCB-CH	&OCB-O	55	.83	.88	.80
A. Johnson (2008)[a]	OCB-CH	OCB-I	55	.93	.88	.76
Kamdar & Van Dyne (2009)[a]	OCB-CH	OCB-I	247	.18	.92	.93
Kickul & Lester (2001)	OCB-CH	&OCB-O	183	.49	.84	.82
Kickul & Lester (2001)	OCB-CH	OCB-I	183	.59	.84	.79
Kickul, Lester, & Belgio (2004)	OCB-CH	&OCB-O	136	.25	.84	.82
Kickul, Lester, & Belgio (2004)	OCB-CH	OCB-I	136	.32	.84	.79
Kickul, Lester, & Belgio (2004)	OCB-CH	Task	136	.15	.84	.79
Ma (2008)[a]	OCB-CH	OCB-I	140	.40	.79	.91
Ma (2008)[a]	OCB-CH	OCB-O	140	.40	.79	.92
Ma (2008)[a]	OCB-CH	Task	140	.18	.79	.97
Marinova (2007)[a]	OCB-CH	OCB-I	124	.61	.96	.93
Marinova (2007)[a]	OCB-CH	OCB-I	107	.61	.90	.83
Marinova (2007)[a]	OCB-CH	Task	124	.59	.96	.94
Mayhew, Ashkanasy, Bramble, & Gardner (2007)	OCB-CH	OCB-I	70	.79	.95	.94
Mayhew, Ashkanasy, Bramble, & Gardner (2007)	OCB-CH	Task	70	.56	.95	.92
McAllister, Kamdar, Morrison, & Turban (2007)	OCB-CH	OCB-I	225	.24	.88	.93
Moorman & Blakely (1995)	OCB-CH	&OCB-O	155	.39	.76	.74
Moorman & Blakely (1995)	OCB-CH	OCB-I	155	.47	.76	.74
Newton, Blanton, & Will (2008)	OCB-CH	&OCB-I	224	.27	.87	.85
Newton, Blanton, & Will (2008)	OCB-CH	&OCB-O	224	.22	.89	.70
O'Driscoll, Pierce, & Coghlan (2006)	OCB-CH	OCB-I	181	.53	.90	.88
Oh, Le, Yoo, & Kim (2006)[a]	OCB-CH	OCB-O	317	.44	.78	.82
Raja (2004)[a]	OCB-CH	&OCB-I	383	.26	.82	.76
Raja (2004)[a]	OCB-CH	&OCB-O	383	.26	.82	.70
Raja (2004)[a]	OCB-CH	&Task	383	.25	.82	.76
Raub & Robert (2007)[a]	OCB-CH	&OCB-I	640	.77	.96	.91
Stamper & Van Dyne (2001)	OCB-CH	OCB-I	257	.67	.85	.91
Tepper, Lockhart, & Hoobler (2001)	OCB-CH	&OCB-O	160	.51	.81	.83
Tepper, Lockhart, & Hoobler (2001)	OCB-CH	OCB-I	160	.61	.81	.73
Van Dyne, Graham, & Dienesch (1994)	OCB-CH	&OCB-O	154	.59	.86	.76

Note. FFM = five-factor model; JS = job satisfaction; OCB = organizational citizenship behavior; ES = Emotional Stability; EX = Extraversion; AG = Agreeableness; CO = Conscientiousness; OP = Openness/Intellect; OCB-O = organization-directed citizenship; OCB-I = individual-directed citizenship; OCB-CH = change-oriented citizenship, Task = task performance; & = composite/average (of multiple OCB behaviors); n = sample size; r = uncorrected/observed correlation coefficient; r_{xx} = predictor reliability (coefficient alpha reported in primary studies); r_{yy} = criterion reliability (coefficient alpha reported in primary studies).

[a] Unpublished primary studies (otherwise, published studies).

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