

A Meta-analysis of the Relationship Between Organizational Commitment and Organizational Citizenship Behavior: Test of Potential Moderator Variables

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Abstract We meta-analyzed the correlation between organizational commitment (OC) and organizational citizenship behavior (OCB) and tested the effects of four potential moderators of this relationship. Eighty-six primary samples ($N=27,640$) were included in the meta analysis. A moderate positive correlation was found between organizational commitment and organizational citizenship behavior. Moderator analysis showed that there was a significant effect of rating source, organization type and culture dimension of individualism vs. collectivism on the OC-OCB relationship. Moderating effect of publication bias was not significant. Implications of findings for theory and practice were discussed and suggestions for further research were provided.

Keywords Organizational citizenship behavior · Organizational commitment

Introduction

Employee behaviors that are outside formal job requirements but help make the workplace better and thus contribute to unit functioning are collectively called organizational citizenship behaviors (OCBs). OCBs are important at multiple levels. They are believed to “shape the organizational, social, and psychological contexts that serve as the catalyst for task activities and processes” (Borman and Motowidlo 1997: 100). Employees who perform OCBs tend to receive more favorable performance evaluations and/or rewards (Van Scotter et al. 2000; Dulebohn et al. 2005; Whiting et al. 2008; Lievens et al. 2008). Research has also shown that

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OCBs also contribute to organizational performance and social capital (Bolino et al. 2002; Podsakoff et al. 1997).

As OCBs are associated with a variety of desirable personal and organizational outcomes, much research has examined its antecedents. Organizational commitment is among the most commonly studied antecedents of OCB (e.g., Schappe 1998; Van Scotter 2000; Gürbüz 2009). Research on the relationship between OC and OCB generally found a significant positive correlation between the two constructs (e.g., MacKenzie et al. 1998; Chen and Francesco 2003; Bogler and Somech 2004; Chu et al. 2006; Lin et al. 2008). Yet, contrary to expectations, in some studies researchers did not find a significant relationship between OC and its dimensions and OCB (e.g., Williams and Anderson 1991; Tansky 1993; Alotaibi 2001). The relationship between continuance commitment (OC.Cont.) and OCB, on the other hand, was consistently negative or insignificant (Meyer et al. 2002; Organ and Ryan 1995).

Meta analyses on the OCB-OC relationship reported significant positive correlations between the two constructs (LePine et al. 2002; Meyer et al. 2002; Riketta 2002; Dalal 2005) and/or their dimensions, with the exception of facets of OCB and continuance commitment not correlating significantly (Organ and Ryan 1995; Podsakoff et al. 1996).

The present study uses meta-analysis to explore (a) the relationship between OC and OCB, and (b) the effect of potential moderator variables in this relationship. It reports the results of a meta-analysis that is based on a comprehensive sample of studies dealing specifically with the OC-OCB relationship and also identifies four potential moderators of this correlation.

Although OC-OCB relationship has been meta-analyzed in previous research, there is value in revisiting these relationships for a number of reasons. First, studies carried out after the last meta-analysis (Dalal 2005), seem to have accumulated large enough empirical literature on OC-OCB relationship to merit a new meta-analysis. By aggregating results across many recent studies, a more precise and updated estimate of the population correlation between OC and OCB can be obtained.

Second, previous meta-analyses involved mostly samples from predominantly individualist cultural settings. As Meyer and his colleagues (2002) noted earlier, research based on the Three-Component Model of commitment is increasingly being conducted outside North American context. So, addition of 10 years worth of research including samples from predominantly collectivist cultural settings (69 % in our sample) should lead to more comprehensive and realistic estimates of the OC-OCB relationship.

Further, testing the effects of such potential moderators as source of ratings, publication bias, type of the organization, and culture on the relationship between OC and OCB might be an important contribution to the literature too.

Construct Definitions

Organizational Citizenship Behavior

OCB was originally defined as “individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization (Organ 1988: 4). In response to criticism concerning various aspects of the original definition (e.g., Morrison 1994: 1561; MacKenzie et al. 1991; Podsakoff and MacKenzie 1994) Organ (1997) later acknowledged that OCB may be recognized and rewarded during performance appraisals. Most recently, Organ and colleagues

(as cited in Spitzmuller et al. 2008: 107) emphasized the discretionary nature of OCB and redefined it as ‘discretionary contributions that go beyond the strict description and that do not lay claim to contractual recompense from the formal reward system’.

In our analysis we differentiate between three forms of OCB: OCB as a general construct (OCB-G), OCB directed at the organization as a whole (OCB-O) and OCB directed at individuals (OCB-I); a framework suggested by Williams and Anderson (1991). OCB-I involves voluntarily helping co-workers and facilitating their work, thereby contributing to unit effectiveness as a whole (Williams and Anderson 1991). OCB-O, on the other hand, is not directed toward any specific employee but aimed at the organization as a whole. Organization is the primary beneficiary of these behaviors (Williams and Anderson 1991).

We believe that this simple conceptual framework is relevant as it covers all dimensions defined by Organ (1988) as well as many other forms of OCB in literature (Podsakoff et al. 2009). This framework is also supported by findings of past theoretical and empirical research (Ilies et al. 2007: 270–271; Ilies et al. 2009: 947). In a study carried out in Turkey, for instance, Şeşen (2010) reported better CFA goodness of fit indexes for the two-factor model of OCB compared to the five-factor model.

Also, previous meta analyses (e.g.,; Chang et al. 2007; Cohen-Charash and Spector 2001; Chiaburu et al. 2011; Dalal 2005; Fassina et al. 2008; Ilies et al. 2007, 2009; Organ and Ryan 1995; Podsakoff et al. 2009) combined various forms/factors of OCB into two factors (OCB-I and OCB-O).

Based upon our analysis of cited meta analyses, we classified following OCB dimensions as OCB-I; “altruism” and “courtesy” defined by Organ (1988), “altruism” defined by Morrison (1994), “interpersonal helping” defined by Borman and Motowidlo (1997), “interpersonal facilitation” defined by Van Scotter and Motowidlo (1996) and “interpersonal facilitation” defined by Van Dyne and LePine (1998). OCB dimensions classified as OCB-O were; “general compliance” defined by Smith et al. (1983), “conscientiousness,” “civic virtue,” and “sportsmanship” defined by Organ (1988), Van Dyne and LePine (1998), Moorman and Blakely (1995), “job dedication” defined by Van Scotter and Motowidlo (1996) and Van Dyne and LePine (1998), “organizational loyalty” defined by Graham (1991) and “defending organizational objectives” defined by Borman and Motowidlo (1997). Those studies that defined other citizenship behaviors were not included in our analysis.

The procedure followed in combining these dimensions into OCB-I and OCB-O will be explained in detail in the [Procedure](#) section.

Organizational Commitment

Like OCB, organizational commitment (OC) has, for quite some time, been a popular topic among researchers in management and organizational behavior because it is, too, associated with various positive organizational outcomes (Riketta 2002).

Porter et al. (1974) defined organizational commitment as the strength of an individual’s identification with and involvement in an organization. They argued that commitment is characterized by (a) a belief in and acceptance of organizational goals and values, (b) a willingness to spend effort, and (c) a desire to maintain membership.

Meyer and Herscovitch (2001: 301) defined commitment as a force that guides a course of action toward one or more targets. According to this definition, two aspects of commitment are “force and target(s).” A target is an “anchor” of attachment and may be the organization, the

supervisor, coworkers, customers, the occupation, or the team. “Force” is about willingness of an employee to maintain his/her membership in the organization. These reasons can be affective, normative, or continuance (Dagenais-Cooper and Paille 2012). This definition draws upon Meyer and Allen’s (as cited in Meyer et al. 1993). Three-Component Model of Commitment; a widely used model of organizational commitment that defines three forms of commitment; affective, continuance, and normative commitment. Affective commitment is described as the emotional attachment to, identification with, and involvement in the organization. Continuance commitment is related with the perceived costs of leaving the organization. Normative commitment is the felt obligation to remain in the organization (Solinger et al. 2008).

Relationship Between OCB and Organizational Commitment

Social exchange theory has been used to explain the relationship between OCB and OC. This theory contends that employees who have had satisfying experiences about the organization respond by behaving in ways that benefit the organization and/or other employees (i.e., OCB) and by displaying commitment to the organization (Cohen and Danny 2008: 434).

Studies generally found a positive relationship between OCB and OC (e.g., Bogler and Somech 2004; Chen and Francesco 2003; Chu et al. 2006; MacKenzie et al. 1998). As noted earlier, some studies did not find a significant relationship between OC or its dimensions and OCB (e.g., Williams and Anderson 1991; Tansky 1993; Alotaibi 2001).

In many studies there was a significant positive relationship between affective commitment and OCB (e.g., Feather and Rauter 2004; Gürbüz 2006; Moorman et al. 1993; Van Scotter 2000) and between normative commitment and OCB (e.g., Gautam et al. 2005; Meyer et al. 1993; Meyer et al. 2002; Nguni et al. 2006; Wasti 2005). The relationship between affective commitment and OCB is relatively stronger, albeit some evidence for the contrary (Cichy et al. 2009; Meyer et al. 2002; Pianluprasidh 2005).

Research on the relationship between continuance commitment and OCB gave conflicting results. Although some studies found a significant positive relationship between continuance commitment and OCB (Nguni et al. 2006; Moorman et al. 1993; Bolat and Bolat 2008) some others found a negative or an insignificant relationship (Karacaoğlu and Güney 2010; Meyer et al. 1993; Meyer & Allen, 1986 cited in Meyer and Allen 1991; Shore and Wayne 1993).

Meta analyses on the OCB-OC relationship generally found significant positive correlations between the two constructs. For the relation between affective commitment and OCB, mean correlations ranged between (0.20) (LePine et al. 2002) and ($\rho=0.32$) (Meyer et al. 2002). Ng and Feldman (2011) reported an effect size of 0.23 for the same relation. For normative commitment similar corrected mean correlations were found ($\rho=0.24$) (Meyer et al. 2002) (see also Riketta 2002; Dalal 2005). As regards dimensions of OC and OCB, Podsakoff and colleagues (1996), for instance, reported significant positive correlations between the two facets of OCB (altruism and generalized compliance) and two forms of (OC and Affective Commitment). However the correlation between the two facets of OCB and Continuance Commitment was insignificant. Similarly, insignificant correlations were reported between continuance commitment and general construct of OCB (Meyer et al. 2002 or altruism (Organ and Ryan 1995).

Based on findings of past empirical research and meta analyses, following hypotheses were formulated on the relationship between OC and OCB:

H₁: There is a significant positive relationship between OC as a general construct (OC-G) and OCB-G (*H_{1a}*), OCB-I (*H_{1b}*) and OCB-O (*H_{1c}*).

H₂: There is a significant positive relationship between OC-Aff. and OCB-G (*H_{2a}*), OCB-I (*H_{2b}*) and OCB-O (*H_{2c}*).

H₃: There is a significant positive relationship between OC-Norm. and OCB-G (*H_{3a}*), OCB-I (*H_{3b}*) and OCB-O (*H_{3c}*).

H₄: There is a no significant relationship between OC-Cont. and OCB-G (*H_{4a}*), OCB-I (*H_{4b}*) and OCB-O (*H_{4c}*).

Potential Moderator Variables

Source of Ratings

Studies of OCB have mostly used measures from self or supervisor ratings. Some scholars argue that using the same method for measuring variables (usually self report surveys) may result in inflated correlations (Spector 2006: 221). Leniency of self-ratings has been found for a variety of occupations like clerical workers, technical subordinates, nurses, first-level superiors and executives and for a variety of constructs. For instance research has shown that self-ratings of performance were significantly higher than ratings by superiors, a phenomenon accounted for by such theoretical explanations as social desirability, self-enhancement or self-serving (see Allen et al. 2000).

Research suggests that although self and supervisor ratings of OCB may be moderately correlated ($r=.35$, $p<0.01$ in Khalid and Ali 2005) or not significantly correlated (Allen et al. 2000), means for self ratings of OCB as a general concept (Khalid and Ali 2005; Ariani 2012) or some dimensions of OCB (altruism and courtesy in Allen et al. 2000) are significantly higher. Similarly, Cardona and Espejo (2002) found significantly higher means for subordinate and self ratings of OCB than for colleague ratings. In their meta analysis, Meyer and colleagues (2002) also found higher correlations between OCB and affective commitment for self ratings ($\rho=0.37$) than for supervisor ratings ($\rho=0.27$).

However Organ and Ryan argued that using supervisor/peer reports for measuring OCB, too, involves bias, as supervisors or peers sometimes fail to notice certain citizenship behaviors. Research findings suggest that managers view citizenship behaviors as a required part of employees' jobs (Podsakoff et al. 2000). More importantly, superiors may only observe OCB that is performed in their presence, which may result in a lowering of the scores in superior ratings of OCB. Using supervisor/peer reports for measuring OCB may thus result in lowered correlations.

74 (88 %) of 84 studies included in our meta analysis used self reports for measuring variables, which may bring about inflated correlations. It is therefore hypothesized that:

H₅: OC–OCB relationship will be moderated by the source of the ratings. Specifically, relationships should be more strongly positive when the behaviors are rated by job incumbents themselves (self rating) than when they are rated by supervisors/peers.

Publication Bias

Being unable to get a study published, a.k.a. file drawer problem, is one of the major problems concerning meta analyses (Sutton et al. 2001: 142). It is a widespread belief that editors/journals favor and prefer to publish studies reporting significant correlations or effects (Rosenthal 1991 cited in Özcan 2008: 77). This belief may sometimes cause researchers to include in their meta analyses only those published studies with significantly positive correlations, so that meta analyses too may yield similar (significantly positive) results. The argument that published findings are not representative of insignificant effects is referred to as publication bias. This publication bias may inflate correlations/effect sizes (Eatough et al. 2011: 622).

Eatough and colleagues (2011) investigated the relationships of role ambiguity, role conflict, and role overload with OCB for published and unpublished studies and found that unpublished studies yielded stronger effect sizes than did published studies. In their analysis of 48 studies from the Cochrane Database of Systematic Reviews, Sutton and colleagues (2000) examined the missing studies and their effect on conclusions of metaanalyses. They found that about half of the sample had some indication of publication bias and a fifth had a strong indication. Yet in most cases these biases did not affect the conclusions.

Based on extant literature and meta analyses (Sutton et al. 2000; Christian et al. 2011; Eatough et al. 2011; Ilies et al. 2007) it is hypothesized that:

H₆: OC–OCB relationship will be moderated by publication bias. Specifically, relationship should be more strongly positive in published studies than unpublished studies.

Organization Type (Public-Private)

There are certain major differences between public and private organizations. Firstly, goals and objectives vary substantially (Metin and Altunok 2002: 86). Organizational culture in public organizations is generally more bureaucratic and accordingly pay and reward systems tend to be based more on such factors as age, status, experience and seniority rather than performance (Kalleberg et al. 2006). As long as they meet formal job requirements public employees are entitled to full pay and privileges. As they are not latently or explicitly expected to exceed task performance, public sector employees may be more prone to display higher levels of OCB.

In contrast, private organizations promote performance based pay and reward systems. Expected to perform better, employees tend to meet high performance expectations first, for which they are entitled to formally specified benefits and privileges. For profit oriented private sector managers the boundary between extra role and in-role performance may often be blurred (Özdevcioğlu 2002). They might start expecting employees to display OCB as part of formal job roles. As a result, private sector employees might be expected to display lower levels of OCB than their public sector counterparts.

We could not find any studies in the extant literature testing the moderating effect of organization type on the OC-OCB relationship. Yet, two distinct meta analyses examining the relationship between emotional strain and role conflict vs. role uncertainty and OCB found that organization type had a moderating effect and that employees in the public sector displayed higher levels of OCB (Chang et al. 2007; Eatough et al. 2011).

Studies comparing OC and OCB levels of public vs. private sector employees generally reported higher levels of OC for private sector employees. For instance, Buchanan (1974) reported lower levels of OC for public sector managers and a study carried out in Turkey (Kaya 2008) found higher levels of OC for private sector and private bank employees respectively. In contrast, in two studies carried out in India, public employees were found to display higher OCB than private sector employees (Pal and Dasgupta 2012; Sharma et al. 2011).

Therefore we hypothesized that:

H₇: OC–OCB relationship will be moderated by the type of organization (public vs. private) in which studies were carried out.

Cultural Differences

After Hofstede's seminal research program around 1980's, culture has started to play a more central role in organizational behavior literature (Gelfand et al. 2007) rendering the generalizability of theories developed and research carried out in western organizational environments to non-western settings questionable.

Referring to culture as the “collective programming of the mind” (Hofstede et al. 2010: 6), Hofstede defined five dimensions along which cultures are different: individualism vs. collectivism, power distance, uncertainty avoidance, masculinity vs. femininity, and long vs. short term orientation. Individualism vs. collectivism is about whether individual or collective values are prevalent in a society. In individualist cultures group values are less important whereas in collectivist cultures there is a stronger drive for the group (Hofstede et al. 2010).

Taking into account the influence of culture on individuals' behaviors, attitudes and reactions, cultural differences can be expected to have a significant effect on employees' OC and OCB too.

In a meta analysis involving studies from 14 countries, Jaramilloa and colleagues (2005) showed that cultural differences had a moderating effect on the relationship between job performance and OC and the relationship was stronger in collectivist cultures.

In another meta analysis, Meyer and colleagues (2002) found a stronger relationship between normative commitment and OCB in studies conducted outside North America ($\rho=0.37$ vs. $\rho=0.10$). The same was true for correlations involving affective commitment ($\rho=0.46$ vs. $\rho=0.27$). Similarly, Wasti (2003) and Cheng and Stockdale (2003) found that the relationship between normative commitment and tendency to stay in the organization was stronger in collectivist cultures.

In the literature on the effects of cultural differences on OCB individualism vs. collectivism and power distance are the most commonly studied dimensions. Yet the strong relationship between these dimensions and the resulting potential multicollinearity problem may complicate their use in a single study (Rockstuhl et al. 2012; Shao et al. 2013). Therefore we preferred to focus on the moderating effect of individualism vs. collectivism alone in our meta analysis.

We classified individual studies according to individualism vs. collectivism index of the country as specified by Hofstede and colleagues (2010; Geert-hofstede [web], 2013). For our analysis countries were classified as either individualist or collectivist. For instance Turkey, with an individualism index value of 37 was classified as a collectivist country.

Therefore we hypothesized that:

H₈: OC–OCB relationship will be moderated by the culture dimension of individualism vs. collectivism of the country the study was carried out. Specifically, relationship should be more strongly positive in studies carried out in a collectivist, compared to individualist, cultural context.

Method

Literature Search

Published and unpublished studies were included in the meta-analysis. Literature search was carried out in 16 international databases (Academic Search Complete, Business Source Complete, EBSCO, Emerald, ERIC, DOAJ, IEEE Xplore Digital Library, JSTOR, PsycINFO, Sage Journals Online, Science Direct, Springer Link, Taylor and Francis Online Journals, Wiley Online Library, Web of Knowledge, Web of Science) and one national (Turkish ULAKBIM) using a variety of related key words (e.g., organizational commitment, extra-role behaviour, organizational citizenship) both in Turkish and English. Popular internet search engines (Google, Google Scholar and Yandex) were also used.

In order to locate full-text unpublished master's theses and doctoral dissertations, Theses and Dissertations Databases of Turkish Council of Higher Education (YOK TVT) and ProQuest were searched. For those theses/dissertations without author's approval for full text accessibility different solutions were tried. One master's thesis was found in library catalogues (Loğa 2003). To access other theses/dissertations, either the author or advisor was contacted. One author sent an electronic copy of his thesis in one week (Akbaş 2010). To access unpublished manuscripts in Turkish, Proceedings of 13 National Management and Organization Congresses held between 2000 and 2012 were searched and authors of studies that had carried out research on related/similar topics were contacted to see if they had any unpublished studies or research in progress.

Inclusion Criteria

Only those studies that reported a correlation coefficient or presented data that could be used to compute a correlation coefficient were included in our analysis. Another inclusion criterion required that the particular study investigate the relationship between OCB as a general construct or OCB factors and OC as a general construct and its three factors suggested by Meyer and Allen (1991) (affective, continuance and normative commitment). Only those studies with a sample that worked either full or part-time in an organization were selected. Two studies that had students as their sample were not included. If two distinct studies used the same sample, only one was included.

No effective limit was set for studies with a Turkish sample. Of studies with a non-Turkish sample, only those made in and after 2005 were included. Because the meta analysis by Dalal (2005) of the relationship between the very same variables covered that sample.

Coding and Results of Searches

Information and data from selected studies were coded in a form developed by researchers. Two coders worked independently to code the data. One of the coders was the third author of the present study and the other was a PhD candidate in the field of organizational behavior. Overall agreement level between coders was 95.84 %. All disagreements were resolved using a subsequent joint discussion.

We used Hunter and Schmidt's (2004: 479–487) and Card's (2012: 64–81) studies as models in developing the coding form which had four sections; the first section involved information about the study and the sample. Information about the instruments was coded in the second section of the form. Correlation coefficients and statistical data that can be used to compute a correlation coefficient (e.g., *t*-test or ANOVA values) were coded in the third section and finally potential moderator variables were coded in the last section. We identified four potential moderator variables: rating source, type of organization (public vs. private), publication bias and culture dimensions of individualism vs. collectivism.

86 independent samples ($N=27,640$) were identified from 84 studies. Two studies (Felfe and Yan 2009 and Rajashi et al. 2012) had been carried out with two independent samples. Of 86 samples, 65 were from published studies; the remaining 21 were from conference presentations, posters, unpublished dissertations, master's theses, and data sets. The overall sample size was 27,640 (mean: 321). 31 of the samples were Turkish ($N=8752$, mean: 282) and 55 comprised non-Turkish respondents. Characteristics of the sample in terms of particular variables are provided in Table 1.

Table 1 Demographic and other characteristics of primary sample respondents

Characteristic	Samples or percentages of primary samples with the characteristic
Country	Number of samples
Turkey	31 (36 %)
United States	15 (17 %)
Iran	8 (9 %)
Israel	5 (6 %)
Pakistan	3 (3 %)
Canada	4 (5 %)
Other (14 countries with 2 or less samples)	20 (24 %)
Publication bias	Number of studies
Published studies	63 (75 %)
Unpublished theses	21 (25 %)
Rating source	Number of samples
Self report	75 (87.82 %)
Supervisor/peer report	11 (13.18 %)
Culture dimensions	
Collectivism	57 (68.74 %)
Sector in which surveyed	
Public	35 (40 %)
Private	47 (55 %)
Not specified	4 (5 %)

Procedure

Meta-analytic procedures specified by Hunter and Schmidt (1990) were used to correct correlations to account for the effects of sampling error. Correction for unreliability was performed for each individual sample.

In those studies that reported correlation coefficients between variables no further computation was made. Some studies reported *t* test or F-test values. These values were converted to correlation coefficients using the method suggested by Hunter and Schmidt (2004) and the formula suggested by Card (2012). For finding fail-safe N and Q-test, Cohen's *d* value was converted to correlation coefficient (*r*) using the formula suggested by Borenstein and colleagues (2009: 77).

For each relationship between our variables, uncorrected weight sample-size correlation coefficient values (\bar{r}) were found by means of sample size and observed (uncorrected) correlation coefficients using the formula suggested by Hunter and Schmidt (2004: 81).

Using the formula suggested by Borenstein and colleagues (2009: 343) instrument related errors were corrected and corrected correlation values (\bar{r}) were found. When a reliability estimate was not provided for a measure in an individual primary sample, however, the correction was accomplished using the mean reliability from the reliability distribution generated from the primary samples (Chan et al. 2008: 365).

Next, using the formula suggested by Borenstein and colleagues (2009: 343) corrected mean correlation coefficients (corrected mean effect size, ρ) were found. Standard error for the ρ value was found using the formula suggested by Hunter and Schmidt (2004: 206). Formulas suggested by Hunter and Schmidt (2004: 94; 167) were used to find instrument and sampling error variances, consequently making up the total error variance. Total error variance was found using the formula suggested by Borenstein and colleagues (2009: 348).

"75 % rule" was used to test potential moderator effects and the "Q-test" based on Hunter & Schmidt's formula (2004: 421) was employed to validate the results.

Eighty percent credibility interval and 95 % confidence interval were used. SDS ρ value was found by using Borenstein and colleagues' formula and 80 % credibility interval was found by using Hunter and Schmidt's (2004: 205) formula. Ninety-five percent confidence interval was used for examining the accuracy of the meta-analytic effect size estimate. Homogeneity of effect sizes was assessed using 80 % credibility intervals.

Corrected mean effect size (ρ) for 95 % confidence interval was found using the formula $\rho \pm 1.96SE\rho$. Hunter and Schmidt's formula (2004: 206) was used to find Standard Error. Fail-safe number was found using Orwin's (1983: 158) formula.

Total error variance and Q-test (when needed) findings were used for moderator effect analyses. Microsoft Excel application (Meta-Analysis Mark X) was used for analyses (Steel [web], 2012).

Findings

Results of the meta-analysis on the relationship between general constructs and facets of OC and OCB are provided in Table 2.

The sample-size-weighted mean correlation between OC and OCB-G refers to a moderately strong relationship ($\bar{r}=0.40$). After correcting for unreliability in both OC and OCB, the sample-size-weighted mean correlation was ($\rho=0.49$). Both 80 % credibility interval

Table 2 Meta-analytic correlation matrix for behavior facets

	OCB-General	OCB-Individual	OCB-Organizational
OC	0.40 (0.49)a	0.34 (0.40)b	0.42 (0.50)c
OC-Affective	0.29 (0.37)d	0.25 (0.32)e	0.29 (0.37)f
OC-Normative	0.25 (0.33)g	0.24 (0.31)h	0.27 (0.35)i
OC-Continuance	0.15 (0.20)j	0.11 (0.16)k	0.12 (0.17)l

Correlations are weighted by sample size (N). Those outside parentheses are uncorrected correlations (i.e., mean r); those in parentheses are corrected for unreliability (i.e., mean ρ). k = number of samples in which relationship was estimated; N = total number of individuals in the k samples; Mean r = mean of uncorrected correlations, weighted by sample size (N); Mean ρ = mean of corrected correlations, weighted by sample size (N); $SD\rho$ = standard deviation of corrected correlations; 95 % CI=lower and upper limits of 95 % confidence interval; 80 % CrI=lower and upper limits of 80 % credibility interval; OCB=organizational citizenship behavior; OC=organizational commitment

a $k=39$, $N=13,134$, $SD\rho=0.18$, 80 % CrI=(0.26–0.72), 95 % CI=(0.43–0.55)

b $k=11$, $N=3977$, $SD\rho=0.27$, 80 % CrI=(0.05–0.77), 95 % CI=(0.24–0.56)

c $k=11$, $N=3982$, $SD\rho=0.23$, 80 % CrI=(0.20–0.81), 95 % CI=(0.36–0.65)

d $k=40$, $N=11,354$, $SD\rho=0.20$, 80 % CrI=(0.11–0.63), 95 % CI=(0.30–0.44)

e $k=27$, $N=8942$, $SD\rho=0.17$, 80 % CrI=(0.10–0.54), 95 % CI=(0.25–0.39)

f $k=26$, $N=8931$, $SD\rho=0.20$, 80 % CrI=(0.13–0.64), 95 % CI=(0.31–0.47)

g $k=30$, $N=7618$, $SD\rho=0.22$, 80 % CrI=(0.26–0.61), 95 % CI=(0.24–0.41)

h $k=18$, $N=5370$, $SD\rho=0.15$, 80 % CrI=(0.04–0.50), 95 % CI=(0.23–0.39)

i $k=18$, $N=5370$, $SD\rho=0.18$, 80 % CrI=(0.12–0.59), 95 % CI=(0.26–0.44)

j $k=26$, $N=7052$, $SD\rho=0.24$, 80 % CrI=(–0.10–0.51), 95 % CI=(0.11–0.30)

k $k=17$, $N=5510$, $SD\rho=0.14$, 80 % CrI=(–0.02–0.33), 95 % CI=(0.08–0.23)

l $k=18$, $N=6209$, $SD\rho=0.21$, 80 % CrI=(–0.10–0.43), 95 % CI=(0.06–0.27)

and 95%confidence intervals, based on the uncorrected correlations, indicated that the relationship was significant.

The relationship between OC and the two facets of OCB was also strong. After correcting for unreliability, the sample-size-weighted mean correlation between OC and OCB-I ($\rho=0.40$); and OCB-O ($\rho=0.50$) were also significant. OCB facets assessed together, relationship was strongest between OC and OCB-O in both samples ($\rho=0.50$).

The analysis of the relationship between OC-Aff. (affective commitment) and three OCB facets showed that relationship was strongest between OC-Aff. and OCB-O ($\rho=0.37$).

The relationship between normative commitment (OC-Norm) and three facets of OCB was moderate. Sample-size-weighted mean correlations were OC-Norm.-OCB-G ($\rho=0.33$), OC-Norm.-OCB-I ($\rho=0.31$) and OC-Norm.-OCB-O ($\rho=0.35$) respectively. Lower and upper limits of 80 % credibility interval and 95 % confidence intervals, based on the uncorrected correlations, indicated that the relationship was significant. This relationship is strongest for OC-N and OCB-O ($\rho=0.35$).

Relationships between continuance commitment and all facets of OCB were positive and higher than expected. Corrected sample-size-weighted mean correlation value was ($\rho=0.20$) for the relationship between OC-Cont. and OCB-G, ($\rho=0.16$) for the relationship between OC-Cont. and OCB-I and ($\rho=0.17$) for the relationship between OC-Cont. and OCB- O. But since 80 % credibility interval lower limit values were negative, relationships were not significant. It is important to note that lower limits for the 95 % confidence interval were positive but still

very close to (0) and standard deviation of corrected correlations were high. Therefore we concluded that relationships were not significant.

Based on results, hypotheses H_1 , H_2 , H_3 (a,b,c) and H_4 (a,b,c) were accepted.

Moderator Analyses

Four moderators of the OC-OCB relationship were analyzed. According to the hypotheses, the four set of moderator variables (source of ratings, publication bias, type of the organization and culture dimension of individualism vs. collectivism) would have a significant effect on the strength of the relationship between OC-OCB.

Table 3 shows the results of moderator effect analysis for rating source on OC-OCB relationship.

Table 3 shows that, like hypothesized, OC-OCB relationship is stronger for incumbent ratings (self report) than for supervisor/peer ratings. Corrected sample-size-weighted mean correlation between OC and OCB was ($\rho=0.37$) for supervisor/peer ratings and ($\rho=0.51$) for self ratings. Based on our findings, hypothesis H5 was accepted.

Results of the moderator effect analysis for publication bias on OC-OCB relationship are provided in Table 4.

The moderating effect of publication bias was significant only on the relationship between normative commitment (OC-Norm.) and OCB. As hypothesized, the relationship between OC-Norm. and OCB is stronger in published studies ($\rho=0.37$) than in unpublished studies ($\rho=0.26$). There was not a significant moderator effect on the relationship between other OC facets and OCB-G. Because, as can be seen in Table 4, lower and upper limits of 95 % confidence interval are close and means of SD ρ for published/unpublished studies are not lower than SD ρ mean values before grouping. Besides, contrary to our expectations, the relationship between OC.Cont.-OCB is stronger for unpublished studies ($\rho=0.23$) than published studies ($\rho=0.19$). Therefore hypothesis H_6 was rejected.

Table 5 shows results of moderator effect analysis of organization type on OC-OCB relationship.

The moderating effect of organization type (public vs. private) on the OC-OCB relationship was significant. Corrected sample-size-weighted mean correlation between OC and OCB for private sector employees ($\rho=0.54$) was stronger than for public sector employees ($\rho=0.44$). Therefore hypothesis H_7 was accepted.

Table 3 The moderating effect of rating source

		k	N	\bar{r}	ρ	SD_ρ	80 % CrI		95 % CI	
							Lower	Upper	Lower	Upper
OC-OCB	Supervisor/Peer	3	1579	0.32	0.37	0.14	0.19	0.54	0.20	0.53
$SD_\rho=0.18^*$	Job incumbent (Self)	36	11,555	0.42	0.51	0.18	0.28	0.74	0.45	0.57
OC-Aff.-OCB	Supervisor/Peer	3	862	0.16	0.20	0.12	0.04	0.35	0.04	0.35
$SD_\rho=0.20^*$	Job incumbent (Self)	37	10,492	0.30	0.39	0.20	0.13	0.64	0.32	0.45

k ; number of samples in which relationship was estimated, N ;total number of individuals in the k samples, \bar{r} ;mean of uncorrected correlations weighted by sample size, ρ ;mean of corrected correlations, weighted by sample size, SD_ρ = standard deviation of corrected correlations; 95 % CI=lower and upper limits of 95 % confidence interval; 80 % CrI=lower and upper limits of 80 % credibility interval

Table 4 The moderating effect of publication bias

		<i>k</i>	<i>N</i>	\bar{r}	ρ	SD_{ρ}	80 % CrI		95 % CI	
							Lower	Upper	Lower	Upper
OC-OCB	Published	27	10,702	0.42	0.52	0.17	0.30	0.73	0.45	0.58
$SD_{\rho}=0.18$	Unpublished	12	2456	0.34	0.41	0.22	0.13	0.69	0.28	0.54
OC.Aff.-OCB	Published	24	7833	0.30	0.39	0.18	0.15	0.62	0.31	0.46
$SD_{\rho}=0.20$	Unpublished	16	3521	0.27	0.34	0.24	0.04	0.64	0.22	0.46
OCNor-OCB	Published	17	4754	0.28	0.37	0.25	0.05	0.69	0.25	0.50
$SD_{\rho}=0.22$	Unpublished	13	2864	0.21	0.26	0.16	0.05	0.46	0.16	0.35
OC.Cont-OCB	Published	15	4544	0.14	0.19	0.27	-0.15	0.53	0.05	0.33
$SD_{\rho}=0.24$	Unpublished	11	2508	0.18	0.23	0.17	0.01	0.45	0.12	0.34

k; number of samples in which relationship was estimated, *N*;total number of individuals in the *k* samples, \bar{r} ;mean of uncorrectedcorrelationsweighted by sample size, ρ ;mean of corrected correlations, weighted by sample size, SD_{ρ} = standard deviation of corrected correlations; 95 % CI=lower and upper limits of 95 % confidence interval; 80 % CrI=lower and upper limits of 80 % credibility interval

Results of the analysis for the moderator effect of culture dimension of individualism vs. collectivism on OC-OCB relationship are provided in Table 6.

The moderating effect of individualism/collectivism on the relationship between OC and OCB was significant. Therefore hypothesis H_8 was accepted. Corrected sample-size-weighted mean correlation for OC-OCB relationship was significantly higher in individualist cultures ($\rho=0.57$) than that in collectivist cultures ($\rho=0.46$) whereas the relationship between OC-Affective, OC-Normative and OC-Continuance and OCB was stronger in collectivist cultures than in individualist cultures.

Table 5 The moderating effect of organization type

		<i>k</i>	<i>N</i>	\bar{r}	ρ	SD_{ρ}	80 % CrI		95 % CI	
							Lower	Upper	Lower	Upper
OC-OCB	Public	20	5599	0.36	0.44	0.19	0.19	0.68	0.35	0.52
$SD_{\rho}=0.18$	Private	17	6670	0.43	0.54	0.16	0.33	0.75	0.46	0.62
OC-Aff.-OCB	Public	16	4817	0.25	0.33	0.18	0.10	0.55	0.24	0.42
$SD_{\rho}=0.20$	Private	21	5703	0.34	0.43	0.21	0.16	0.70	0.33	0.52
OC-Nor-OCB	Public	11	2881	0.26	0.35	0.26	0.01	0.68	0.19	0.51
$SD_{\rho}=0.22$	Private	16	3826	0.27	0.34	0.21	0.07	0.61	0.23	0.45
OC-Cont-OCB	Public	11	2958	0.10	0.14	0.29	-0.23	0.52	-0.03	0.32
$SD_{\rho}=0.24$	Private	15	4094	0.19	0.25	0.17	0.04	0.46	0.16	0.34

k; number of samples in which relationship was estimated, *N*;total number of individuals in the *k* samples, \bar{r} ;mean of uncorrectedcorrelationsweighted by sample size, ρ ;mean of corrected correlations, weighted by sample size, SD_{ρ} = standard deviation of corrected correlations; 95 % CI=lower and upper limits of 95 % confidence interval; 80 % CrI=lower and upper limits of 80 % credibility interval

Table 6 The moderating effect of individualism vs. collectivism

		<i>k</i>	<i>N</i>	\bar{r}	ρ	SD_{ρ}	80 % CrI		95 % CI	
							Lower	Upper	Lower	Upper
OC-OCB	Individualist	6	4189	0.45	0.57	0.05	0.50	0.64	0.52	0.63
$SD_{\rho}=0.18$	Collectivist	33	8945	0.38	0.46	0.20	0.20	0.71	0.39	0.53
OC-Aff.-OCB	Individualist	9	3269	0.19	0.25	0.13	0.08	0.42	0.15	0.34
$SD_{\rho}=0.20$	Collectivist	31	8085	0.33	0.42	0.21	0.15	0.68	0.34	0.49
OC-Nor-OCB	Individualist	7	1547	0.12	0.15	0.14	-0.02	0.32	0.03	0.27
$SD_{\rho}=0.22$	Collectivist	23	6071	0.29	0.37	0.22	0.08	0.65	0.27	0.47
OC-Cont-OCB	Individualist	6	1542	-0.01	-0.01	0.16	-0.21	0.19	-0.15	0.13
$SD_{\rho}=0.24$	Collectivist	20	5510	0.20	0.27	0.22	-0.01	0.55	0.17	0.37

k; number of samples in which relationship was estimated, *N*; total number of individuals in the *k* samples, \bar{r} ; mean of uncorrected correlations weighted by sample size, ρ ; mean of corrected correlations, weighted by sample size, SD_{ρ} = standard deviation of corrected correlations; 95 % CI = lower and upper limits of 95 % confidence interval; 80 % CrI = lower and upper limits of 80 % credibility interval

Discussion

The present meta analysis estimated the relationship between OCB and OC at both general construct and facet levels and assessed moderators of this relationship.

Based on 86 independent samples ($N=27,640$) from 84 studies, we found moderately strong to strong relationships between general constructs of OCB and OC and their facets. Especially the relationship between OC and OCB as general constructs; and the relationship between OC and OCB-O were relatively stronger. At facet level, relationship between affective commitment (OC.Aff.) and organization-directed citizenship (OCB-O) was relatively stronger. An exception was the relationship between continuance commitment (OC.Cont.) and OCB, which was still positive but not significant. As employees display higher levels of commitment, they have a greater tendency to direct those behaviors toward the organization as a whole rather than individuals in the organization.

Our findings are consistent with findings of previous meta-analyses which reported significant positive correlations between OC and OCB (Podsakoff et al. 1996; LePine et al. 2002; Meyer et al. 2002; Riketta 2002; Dalal 2005) but negative or insignificant relationships between continuance commitment (OC.Cont.) and OCB (Meyer et al. 2002; Organ and Ryan 1995; Podsakoff et al. 1996).

Four moderators of the OC-OCB relationship were tested: rating source, publication bias, organization type and culture dimension of individualism vs. collectivism.

Moderator analysis showed that source of ratings had a significant effect on the OC-OCB relationship. Most studies (76 %) included in our analysis used self reports of OCB. Such concerns as social desirability and common method variance associated with self reports may have resulted in inflated correlation coefficients (Spector 2006; Podsakoff et al. 2012). Analysis results prior to rating source-based grouping support this claim, as mean value for SD_{ρ} - supervisor/peer (0.14) and SD_{ρ} - self (0.18) is lower than the pre-grouping SD_{ρ} value (OC-OCB SD_{ρ} : 0.18). Thus we suggest that meta analyses, rather than studies using single rating source, should incorporate a greater number of studies with various rating sources so as to allow a more realistic assessment of the relationship between OCB and other constructs.

Findings on the moderating effect of publication bias show that whether a study has been published or not has no significant effect on the relationship between OC and OCB or between facets of both constructs, except on OC.Norm. and OCB relationship. As a result, we think it is safe to argue that moderator effect of publication bias is slight and insignificant, a result supporting previous evidence (Hauenstein et al. 2001; Eatough et al. 2011; Christian et al. 2011).

Moderator effect of organization type (public vs. private) on the OC and OCB relationship was significant with a stronger OC-OCB relationship for private sector employees than for public sector employees. Moderating effect of organization type on OC.Norm.-OCB and OC.Cont.-OCB relationship was not significant.

Previous research comparing OC and OCB levels of public vs. private sector employees found significantly higher levels of OC (Buchanan 1974; Kaya 2008) and lower levels of OCB (Pal and Dasgupta 2012; Sharma et al. 2011) for private sector employees. Our analysis explored the moderating effect of sector type on the OC-OCB relationship and showed that this relationship was moderated by sector type with a significantly stronger relationship in private sector organizations.

Our analysis on the moderating effect of individualism vs. collectivism showed that relationship between OC facets (OC.Aff., OC.Norm. and OC.Cont.) and OCB was stronger in collectivist cultures than in individualist cultures. Interestingly enough, relationship between OC-OCB as global constructs was stronger in individualist cultures than in collectivist cultures, which is among the most noteworthy findings of our analysis. This finding conflicts with findings of previous research (Dalal 2005; Meyer et al. 2002; Organ and Ryan 1995; Riketta 2002) carried out in individualist cultural setting of North America. The high correlation between OC-OCB in individualist cultures can be explained by the fact that only studies after 2005 were included in our analysis ($k=6$) and one study (Albrecht 2012) ($N=3437$) accounted for 82 % of the overall sample ($N=4189$) of the 6 studies in the analysis.

Implications for Theory and Practice

Our meta analysis showed that there were moderately strong to strong relationships between general constructs and dimensions of OCB and OC with the exception of the relationship between continuance commitment (OC.Cont.) and OCB, which was not significant.

Given the importance of OCB for more effective organizational functioning as well as a plethora of desired organizational outcomes and the strong relationship between OC and OCB, especially between OC.Gen. and OC.Aff. and OCB-O, a high level of employee commitment is crucial for promoting extra role behaviors directed towards the organization as a whole and individuals therein.

The primary finding of the present meta-analysis demonstrated that the relationship between organizational commitment and extra-role performance is rather straightforward. The relationship between OC and OCB as general constructs and their facets are significantly positive. Except for employees who feel that it is more costly to leave the organization, employees who are committed tend to display higher levels of extra role behavior.

Based on our findings it can be argued that the relationship between organizational commitment and citizenship behaviors is also highly contextual. Although findings do not allow us to arrive at uniform conclusions as to the role of contextual variables, factors like the type of the organization and individualist vs. collectivist orientation of the culture play an important role in this relationship. Our meta-analysis showed that as expected, OC-OCB

relationship was stronger for incumbent (self) ratings than for supervisor/peer ratings, and for private sector employees than for public sector employees. Similarly, the relationship between OC.Norm. and OCB was stronger in published studies than in unpublished studies. The relationship between OC and OCB as general constructs was significantly stronger in individualist cultures than in collectivist cultures. However, the relationship between three OC facets and OCB was stronger in collectivist cultures than in individualist cultures.

The results of this meta-analysis have practical implications in two respects. First, the results suggest that OC is a better predictor of OCB when: (a) performance is measured by self-reports rather than supervisor-peer ratings; (b) private sector employees rather than for public sector employees are targeted; and (c) collectivist cultures rather than individualist cultures are studied. Second, with the same caveat, conditions (b) and (c) point to circumstances under which attempts to increase productivity through OC may be particularly effective. The present findings clearly illustrate Meyer et al.'s (2002) contention that "...but what is needed is more systematic cross-cultural research in which relations among the constructs are examined in the context of existing theories of cultural differences. Such research would make a particularly valuable contribution to our understanding of commitment in the global economy" (p. 44).

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*References marked with an asterisk indicate studies included in the meta-analysis

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