

# Individual performance as a multidimensional construct: a test of construct validity

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Received: 14 October 2015 / Revised: 16 October 2015 / Accepted: 27 October 2015 /  
Published online: 11 November 2015  
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**Abstract** While much of the extant literature in public management has focused on individual performance using only in-role or job performance, there is a need to consider another approach to individual performance, one that includes extra-role performance. However, public sector organizations have rarely emphasized the integration of these two types of behavioral performance to measure individual performance. Using confirmatory factor analysis and other statistical analyses, this study examines the construct validity of a multidimensional measure of individual performance. This analysis supports a multidimensional approach to individual performance. The implications and limitations of the findings are discussed.

**Keywords** Individual performance · Multidimensional construct · Construct validity · In-role performance · Extra-role performance

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This article is based on the first author's doctoral dissertation, completed at the University at Albany, State University of New York in the United States. The corresponding author provided directions and comments for the development of this article.

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## Introduction

In the past 15 years, performance has become a core issue of new public management (NPM), an approach that attempts to apply market- and private-based approaches to public sector organizations (Barzelay 2001; Bouckaert and Halligan 2008; Moynihan and Pandey 2005). While most studies in public management have focused on performance at the macrolevel (e.g., Brewer and Selden 2000), some researchers and practitioners have argued that there is a need to study performance at the micro level because individual behavior is an important factor within a larger performance model (Carson et al. 1992; Motowidlo et al. 1997). Moving away from studies that have focused primarily on in-role performance, commonly referred to as job performance, to measure individual performance, some researchers have argued that it is necessary to consider extra-role performance as a second dimension of work performance (MacKenzie et al. 1991; Organ et al. 2006). Such a multidimensional approach to individual performance, examining both types of behavioral performance (i.e., in- and extra-role performance), has rarely been attempted in public management. Rather, emphasis has been placed almost exclusively on in-role behavior. Given this limited and arguably narrow approach in the field of public management, it is difficult to develop a more complete picture of individual performance within the workplace.

As a first step to examining the multidimensional approach to individual performance, we conducted a confirmatory factor analysis (CFA) to examine whether the two types of behavioral performance are distinct dimensions within the construct of individual performance in the workplace. It should be noted, however, that while the extant literature in organizational behavior has reached conceptual consensus regarding the distinction between the two dimensions of individual performance (Allen et al. 2004; Van Dyne and LePine 1998), few studies have been conducted to demonstrate empirically whether the two dimensions are empirically distinct. Before conducting the CFA, this study examined whether the two types of behavioral performance have construct validity, including discriminant and convergent validity. With these empirical analyses, this study is expected to contribute to the development of constructing individual performance as multidimensional, including both in- and extra-role performance.

## Literature review

Studying individual behavior, Katz (1964, p. 132) noted three types of behavior that are factors for an effectively functioning organization:

- (1) People must be induced to enter and remain within the system;
- (2) They must carry out their role assignments in a dependable fashion; and
- (3) There must be innovative and spontaneous activity in achieving organizational objectives which go beyond the role specification.

Katz's (1964) second and third behavioral categories are classified, respectively, as in-role behavior, defined as role assignments that are related to the individual's job description, and extra-role behavior, defined as discretionary behavior that goes beyond assigned job duties (Bateman and Organ 1983; Smith et al. 1983). Based on Katz's (1964) classification of behavior, most existing studies have supported the distinction between in- and extra-role behavior (Motowidlo and Van Scotter 1994; Organ 1994; Van Dyne et al.

1995; Werner 1994). Some studies (e.g., Morrison 1994), however, have pointed out the difficulty in differentiating the two types of behaviors, arguing that employees are more likely to see their workplace behaviors as in-role rather than extra-role.

To address the uncertainty regarding the distinction between in- and extra-role behaviors, this study reviews the dissimilarity between the two types of behavior. In addition, we examine definitions and issues of dimensionality with regard to individual performance, especially focusing on extra-role performance. Katz (1964, p. 132) notes that “an organization which depends solely upon its blue-prints of prescribed behavior is a very fragile social system.” More recently, other researchers have pointed out that an employee’s extra-role behavior—i.e., going above and beyond the formal job description and requirement—is not only important in evaluating overall performance, but is also a major condition associated with improvements in organizational outcomes (Katz and Kahn 1966; Netemeyer et al. 1997).

Indeed, as Motowidlo and Van Scotter (1994) have pointed out, most recent studies have moved their attention to Katz’s (1964) third form of employee behavior because extra-role behavior (i.e., organizational citizenship behavior) can lead to an increase in organizational performance and effectiveness (Borman and Motowidlo 1993; Brief and Motowidlo 1986; MacKenzie et al. 1998; Organ 1988; Podsakoff et al. 1997; Podsakoff and MacKenzie 1994; Smith et al. 1983). Some researchers have argued, however, that some studies of workplace performance have not relied sufficiently on empirical research (Organ and Konovsky 1989; Podsakoff and MacKenzie 1997). In addition, some researchers have found that some forms of extra-role behavior (e.g., helping) can also have negative impacts on organizational performance (Podsakoff and MacKenzie 1994).

### **In-role versus extra-role behavior**

Katz and Kahn (1966, p. 174) defined role behavior as “the recurring actions of an individual, appropriately interrelated with the repetitive activities of others so as to yield a predictable outcome.” Additionally, Van Dyne et al. (1995, p. 216) noted that organizational roles function to “delineate expected behaviors, and form the foundation of job descriptions, expectations and stereotypes.” Thus, the notion of organizational roles has been studied as an important construct influencing workers’ behaviors and thoughts. Before the early 1980s, most researchers in organizational sciences focused on Katz’s (1964) second category of role behavior, which is now generally referred to as in-role behavior, task-related performance, or role performance (Borman and Motowidlo 1997; Motowidlo 2000; Motowidlo et al. 1997; Puffer 1987). In general, in-role behavior is defined as “part of one’s job responsibilities” (Mayer and Gavin 2005, p. 875) or as the employee’s “role assignment or formal job requirements” (Williams 1988, p. 3). Thus, in-role behavior is a construct that has been traditionally employed to measure job or task performance for the purpose of evaluating employees’ activities that are associated with prescribed job descriptions and requirements (Borman and Motowidlo 1997; Motowidlo 2000; Van Dyne et al. 1994).<sup>1</sup>

In-role behavior, however, has more recently been identified as only one element of individual performance, and researchers have increasingly focused on Katz’s (1964) third

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<sup>1</sup> Borman and Motowidlo (1997, p. 99) define task performance as “the effectiveness with which job incumbents perform activities that contribute to the organizations’ technical core either directly by implementing a part of its technical process, or indirectly by providing it with needed materials or services” (Borman and Motowidlo 1993).

type of role behavior, which is generally referred to as extra-role behavior. Van Dyne et al. (1995) note that, since the early 1980s, four constructs have been used to describe extra-role behavior: organizational citizenship behavior (e.g., Van Dyne et al. 1994), prosocial organizational behavior (e.g., Brief and Motowidlo 1986), whistle-blowing (e.g., Dozier and Miceli 1985), and principled organizational dissent (e.g., Graham 1983). Based on these conceptual definitions, extra-role behavior is normally defined as an altruistic, conscientious, and discretionary behavior that is not compensated by contingent or formal reward systems (Farh et al. 1990; Organ and Konovsky 1989; Smith et al. 1983; Williams and Anderson 1991). In particular, it is defined as “individual contributions in the workplace that go beyond role requirements and contractually rewarded job achievements” (Organ and Ryan 1995, p. 775). Thus, although extra-role behaviors are not explicitly rewarded, they are understood to include noncontingent, prosocial, and spontaneous work behaviors that contribute to the performance and profits of the organization (Katz and Kahn 1966; Motowidlo and Van Scotter 1994; Organ 1994). Supporting this argument, Mowday et al. (1982, p. 15) noted, “There are many instances where organizations need individual members ... to perform above and beyond the call of duty for the organization.”<sup>2</sup>

While arguing for the distinction between in- and extra-role behaviors, some researchers have argued that the two behavioral types together comprise the individual workplace performance (Borman et al. 1995; MacKenzie et al. 1991; Orr et al. 1989; Sparrowe et al. 2001; Van Dyne et al. 1995, 1994; Van Dyne and LePine 1998; Williams 1988; Werner 1994). Supporting the distinction, Sparrowe et al. (2001) use in-role and extra-role behaviors as two separate dimensions in measuring individual performance. In addition, some studies have pointed out that the two types of behavior have different antecedents (Borman and Motowidlo 1993). For example, extra-role behavior is more likely to be related to job attitudes (e.g., job satisfaction and organizational fairness) and dispositional factors (e.g., agreeableness and equity sensitivity) than is in-role behavior (Farh et al. 1997; Lee and Allen 2002; Moorman 1991; Moorman et al. 1993; Niehoff and Moorman 1993). Predictors that affect in-role behaviors (i.e., task performance) are task-related knowledge, abilities, and skills (Borman and Motowidlo 1993). A similar argument regarding the distinctiveness of antecedents between in- and extra-role behaviors is made by Organ and Ryan (1995), who note that the interaction between knowledge, skill, and ability and incentive structures determine in-role or task performance.

In assuming a distinction between in- and extra-role behaviors, however, it is important to note that other studies (e.g., Borman 1987; Morrison 1994; Schnake 1991) have raised issues concerning the difficulty of distinguishing between these two types of performance. For example, among the five factors in Organ’s (1994) model of organizational citizenship behavior (i.e., helping, compliance, sportsmanship, courtesy, and civic virtue), Vey and Campbell (2004) have found the sportsmanship has been reported as an indicator of both in- and extra-role behaviors, and that courtesy and conscientiousness are often considered

<sup>2</sup> Extra-role behavior is often referred to as contextual or qualitative performance (Motowidlo and Van Scotter 1994; Organ 1994; Van Scotter et al. 2000). Contextual performance is defined as “those contributions that sustain an ethos of cooperation and interpersonal supportiveness of the group” (Organ et al. 2006, p. 31) or “behavioral patterns that support the psychological and social context in which task activities are performed” (Van Scotter et al. 2000, p. 526). Based on these definitions, the theoretical background of contextual performance is rooted in organizational citizenship behavior and prosocial organizational behavior (Brief and Motowidlo 1986; Smith et al. 1983). Similarly, supporting the distinction between contextual and task performance (Motowidlo 2000; Organ et al. 2006), Borman and Motowidlo (1997) note that task activities are more related to prescribed/expected roles than are elements of contextual performance. In addition, the antecedents of task performance are more likely to involve cognitive ability, while those of contextual performance are more likely to involve personality.

to be in-role behaviors. Additionally, Graham (1991) has argued that organizational citizenship may be understood as an extended form of job performance. Similar to others who have identified difficulties in differentiating the two types of behaviors, Morrison (1994, p. 1544) notes that “the boundary between in-role and extra-role work behavior is ill-defined and subject to multiple interpretations.” Thus, although most studies have reported the behaviors as distinct, there is a need to further empirically examine the distinction between them.

### **Dimensionality of organizational citizenship behavior (OCB)**

While OCB is generally conceived as individual-level behaviors that indirectly contribute to the effective functioning of the organization through employees’ willingness to go beyond narrowly defined role definitions, debates regarding the operationalization of OCB continue because researchers have not consistently agreed upon the dimensionality of the construct (Bateman and Organ 1983; LePine et al. 2002; Smith et al. 1983; Williams 1988). One reason for the difficulty in identifying a consistent set of dimensions for OCB is that many different terms have been used to describe citizenship behaviors, such as extra-role behavior (Van Dyne et al. 1995), prosocial behavior (Brief and Motowidlo 1986), organizational spontaneity (George and Brief 1992), and contextual performance (Borman and Motowidlo 1997). These diverse operational definitions of OCB lead researchers to focus on the relationship between OCB and other constructs, rather than on developing a consensus definition (Podsakoff et al. 2000). In addition, the construct of OCB has been studied in several areas of research, such as human resource management (e.g., MacKenzie et al. 1998), leadership (e.g., Podsakoff and MacKenzie 1995), and marketing (e.g., Netemeyer et al. 1997). As a result, there is no consensus on the dimensionality of OCB. Here, we summarize the extant literature on the dimensionality of OCB, focusing on the primary dimensions that have been identified in the OCB literature: helping behavior, organizational compliance, sportsmanship, and civic virtue (Organ et al. 2006; Organ and Ryan 1995).

First, *helping behavior* has been studied as a major dimension of citizenship behavior (Organ 1988; Van Dyne and LePine 1998). Although it was initially labeled as altruism (Organ and Ryan 1995), more recent studies have used the term “helping” (Organ et al. 2006). It has also been referred to in other studies as courtesy, peacemaking, cheerleading, OCBI, and interpersonal facilitation (Organ 1990; Van Scotter and Motowidlo 1996). Most studies have empirically confirmed that these behaviors load on a single factor (MacKenzie et al. 1993; Podsakoff and MacKenzie 1994). Helping behavior is defined as voluntarily providing assistance to other persons in an organization. Second, *organizational compliance*, commonly called conscientiousness in recent studies, has also been studied as a major factor of OCB in the literature (Organ et al. 2006). This dimension has been referred to as generalized compliance, organizational obedience, job dedication, and OCBO (Graham 1991; Van Scotter and Motowidlo 1996). Based on these conceptualizations, this study assumes that this dimension is related to an individual’s acceptance of and obedience to an organization’s rules and procedures. As Smith et al. (1983) note, organizational compliance does not involve helping a specific person, but rather giving aid to others in an organization. Third, *sportsmanship* is one of Organ’s (1988) original five dimensions, although few studies in the extant literature have paid attention to this dimension (Borman and Motowidlo 1993; Organ 1990). In general, it is seen as conceptually overlapping with Williams and Anderson’s (1991) OCBO, Van Scotter and Motowidlo’s (1996) job dedication, and Van Dyne et al.’s (1994) loyalty. While sportsmanship has played a limited role in explaining the OCB construct, some

studies have empirically supported its distinction from other forms of OCB (Podsakoff et al. 1990; Podsakoff and MacKenzie 1994). Podsakoff et al. (2000) expanded the concept, arguing that an individual exhibiting sportsmanship does not complain about other members' misconduct, and maintains a positive attitude. Fourth, *civic virtue*, a dimension originally developed by Organ (1988, 1990), refers to such behaviors as attending and participating in meetings in the organization. It is seen as a necessary precondition to exhibiting discretionary and spontaneous behaviors (Organ et al. 2006). Civic virtue has also been referred to as organizational participation and protecting the organization (George and Brief 1992; George and Jones 1997). Thus, it emphasizes an individual's organizational responsibilities and commitment to the organization.

It should be noted that although the four dimensions discussed here are commonly used to represent the OCB construct in the literature, there are other dimensions that have been used to study OCB. For example, organizational loyalty—which is conceptualized as spreading goodwill and endorsing, supporting, and defending organizational objectives (Borman and Motowidlo 1993; George and Brief 1992)—has been studied as a dimension of OCB that emphasizes the organization's objectives and goals (Graham 1991). However, some studies note that this dimension overlaps with the sportsmanship and civic virtue dimensions (LePine et al. 2002). In sum, as noted in both conceptual and empirical literature on OCB, the various dimensions of OCB proposed by different researchers have been seen as overlapping, rather than distinct.

## Research hypotheses

### Construct validity of extra-role performance

As noted above, the extant literature has identified the construct of extra-role behavior, commonly referred to as OCB, as altruistic and discretionary behavior that is not compensated by the official payment system (Farh et al. 1990; Organ 1994; Organ et al. 2006). Although a range of dimensions has been used to measure OCB [e.g., Organ's (1994) five-factor model], this study is interested in Williams' (1988; see also Williams and Anderson 1991) argument that OCB can be divided into two dimensions—OCBI (organizational citizenship behavior-individual) and OCBO (organizational citizenship behavior organization). Williams and Anderson (1991, p. 602) define OCBI as “behaviors that immediately benefit specific individuals and indirectly through this means contribute to the organization.” Alternatively, OCBO is defined as “behaviors that benefit the organization in general” (Williams and Anderson 1991, p. 601). The dimensions of OCBI and OCBO have been categorized into helping behavior and organizational compliance, respectively (Organ et al. 2006). Based on the literature, this study examines whether the two dimensions—OCBI and OCBO—have discriminant and convergent validity.

**Hypothesis 1** OCBI and OCBO are empirically distinct dimensions of extra-role performance and independently contribute to an overall construct of extra-role performance.

### Construct validity of individual performance

While some researchers have noted the difficulty in distinguishing between the constructs of in-role and extra-role performance (Borman 1987; Schnake 1991), more recent studies

have supported the notion that the two constructs are conceptually distinct (Allen et al. 2004; Van Dyne et al. 1995; Werner 1994). Supporting this distinction between the two types of behavior, the extant literature has argued that in-role and extra-role behaviors are independent constructs to explain overall individual performance (Allen and Rush 1998; Orr et al. 1989). Following this argument, this study hypothesizes that the three dimensions of individual performance—OCBI, OCBO, and in-role behavior (IRB)—have construct validity, examined in terms of convergent and discriminant validity.

**Hypothesis 2** OCBI, OCBO, and IRB are three empirically distinct dimensions of individual performance and independently contribute to an overall construct of individual performance.

## Methodology

### Survey respondents

Using a multistage sampling method, we collected data from employees of the largest local government in Korea, the city of Seoul, during February of 2008. In the first step, we randomly selected 8 of 32 bureaus that provide a list of all employees on their website. In the next step, we randomly distributed questionnaires to 50 employees in each selected bureau. Of the 400 questionnaires that were mailed to the participants, we collected 191 usable responses (response rate = 47 %). In order to reduce social desirability and common-method variance, managers were asked to assess employees' work performance.<sup>3</sup> After participants had returned their questionnaires, we contacted individual managers and asked them to assess their employees' in-role and extra-role performance. In sum, 42 managers participated in this research by evaluating their employees' in-role and extra-role performance.

### Variables

To measure extra-role performance, this study adopted Williams' (1988) seven-item OCBI (e.g., "Help others who have been absent") and seven-item OCBO (e.g., "Attendance at work is above the norm") instrument. Williams and Anderson (1991) reported appropriate internal consistency for OCBI ( $\alpha = .88$ ) and OCBO ( $\alpha = .75$ ). Additionally, we used the seven-item IRB scale (e.g., "Engages in activities that will directly affect his/her performance evaluation") developed by Williams (1988) to measure in-role performance. The reliability for the IRB scale was reported as .91 (Williams and Anderson 1991).

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<sup>3</sup> The consent letter sent to employees explained that completing the questionnaire indicated their consent to participate in the research, including the fact that supervisors would be asked to evaluate employees' in-role and extra-role performance. The letter also indicated that this evaluation was not meant as a formal employee evaluation. When the participants returned their questionnaires, we contacted their managers to ask for the evaluation. The consent letter sent to managers along with the questionnaire regarding the employees' performance evaluation included the participants' consent to be evaluated on in-role and extra-role performance, as well as information about the study's research goals and methodology. All consent letters informed employees and managers that employees and their managers were assigned identification numbers on the questionnaire in order to match employees' and managers' surveys.

**Table 1** Correlations and reliabilities

	Mean	SD	1	2	3
1. Extra-role performance (OCBI)	5.11	.72	(.87)		
2. Extra-role performance (OCBO)	5.67	.67	.46**	(.80)	
3. In-role performance	5.66	.71	.54**	.69**	(.92)

Cronbach's alpha is presented in parentheses

\*\* Correlation is significant at  $p < .01$

## Data analysis

Structural equation modeling (SEM) was employed to examine whether the two constructs—in-role and extra-role performance—contribute distinctly to the concept of individual performance. Using CFA, this study also examined whether each construct has construct validity, examined in terms of discriminant and convergent validity. That is, SEM using CFA was used to verify the proposed factor structure, as well as to provide a deeper test of the construct validity of the measurement model (Byrne 2001; Kline 2005). In addition, we employed variance extracted (VE), which is defined as “the average percentage of variation explained among the items” (Hair et al. 2006, p. 773), and construct reliability (CR), which is defined as a “measure of reliability and internal consistency of the measured variables representing a latent construct” (Hair et al. 2006, p. 771) to assess construct validity.<sup>4</sup> A series of model fit indices, including absolute fit indices (e.g., root mean square residual) and incremental fit indices (e.g., normed fit index), were examined to assess model fits (Fan et al. 1999).

## Results

### Descriptive statistics

Table 1 provides the descriptive statistics, including means and standard deviations, for the measurements studied in this research. Table 1 also reports correlation coefficients. The findings indicate that all correlation coefficients ( $r$ ) are statistically significant at  $p < .01$ . In addition, Table 1 indicates that alpha reliabilities achieved Nunnally and Berstein's (1994) recommended level of internal consistency (.70).

<sup>4</sup> Variance extracted (VE) and construct reliability (CR) were calculated with the following equations:

$$VE = \frac{\sum_{i=1}^n \lambda_i^2}{n},$$

where  $\lambda$  is the standardized factor loading and  $i$  is the number of items.

$$CR = \frac{(\sum_{i=1}^n \lambda_i)^2}{(\sum_{i=1}^n \lambda_i)^2 + (\sum_{i=1}^n \delta_i)},$$

where  $\lambda_i$  is the standardized factor loading and  $\delta_i$  is the error variance terms for a construct.

## First-order confirmatory factor analyses of individual performance

The results of the CFA conducted on the seven-item measure of OCBI indicated that the model fit obtained from the model was not generally acceptable ( $\chi^2 = 86.321$ ,  $\chi^2/\text{df} = 6.166$ ,  $\text{RMSR} = .065$ ,  $\text{GFI} = .882$ ,  $\text{AGFI} = .764$ ,  $\text{RMSEA} = .165$ ,  $\text{NFI} = .860$ ,  $\text{CFI} = .878$ ). However, the results indicated that all items' regression weights were statistically significant ( $p < 0.001$ ), and all observed indicators' factor loadings were above the threshold. Thus, a series of modification processes to the baseline model of OCBI were required to improve the model fit indices. Based on the modification indices, one item (OCBI6) was removed because it had a lower factor loading (.56) and its error term was correlated with other error terms (i.e.,  $e_1$ ,  $e_2$ , and  $e_7$ ). In addition, a covariance term was added between the error terms for OCBI1 and OCBI2 because the value of the modification index (MI) was extremely high (52.12). The respecified model indicated improvement in fit ( $\chi^2 = 11.598$ ,  $\chi^2/\text{df} = 1.450$ ,  $\text{RMSR} = .026$ ,  $\text{GFI} = .979$ ,  $\text{AGFI} = .945$ ,  $\text{RMSEA} = .049$ ,  $\text{NFI} = .978$ ,  $\text{CFI} = .993$ ). In addition, all regression weights in the respecified model were significant ( $p < 0.001$ ).

The initial results of the CFA conducted on the seven-item measure of OCBO indicated that the model fit indices were also unacceptable ( $\chi^2 = 71.597$ ,  $\chi^2/\text{df} = 5.114$ ,  $\text{RMSR} = .074$ ,  $\text{GFI} = .910$ ,  $\text{AGFI} = .819$ ,  $\text{RMSEA} = .147$ ,  $\text{NFI} = .837$ ,  $\text{CFI} = .862$ ). Considering standardized regression weights, we found that the factor loadings of two items (OCBO6 and OCBO7) were below .50. These two observed indicators were removed from the proposed theoretical model, and a covariance term was added between the error terms for OCBO1 and OCBO2 based on modification indices. The respecified model showed an improvement in model fit indices ( $\chi^2 = 3.988$ ,  $\chi^2/\text{df} = .997$ ,  $\text{RMSR} = .020$ ,  $\text{GFI} = .992$ ,  $\text{AGFI} = .969$ ,  $\text{RMSEA} = .000$ ,  $\text{NFI} = .989$ ,  $\text{CFI} = 1.000$ ). In addition, all five items' factor loadings in the final model are above the recommended threshold.

The CFA conducted on the seven-item measure of in-role performance (IRP) indicated that the model needed to be modified to increase the model fit ( $\chi^2 = 137.692$ ,  $\chi^2/\text{df} = 9.835$ ,  $\text{RMSR} = .051$ ,  $\text{GFI} = .861$ ,  $\text{AGFI} = .722$ ,  $\text{RMSEA} = .216$ ,  $\text{NFI} = .855$ ,  $\text{CFI} = .867$ ). It should be noted, however, that although most fit indices were unacceptable, all observed indicators' regression weights were statistically significant ( $p < 0.001$ ), and their factor loadings were above the threshold. To improve the model fit of the measurement model, the sixth indicator of IRP was removed from the baseline model because it covaried with other items' error terms. All fit indices of the respecified measurement model of in-role performance were improved ( $\chi^2 = 10.642$ ,  $\chi^2/\text{df} = 1.182$ ,  $\text{RMSR} = .015$ ,  $\text{GFI} = .982$ ,  $\text{AGFI} = .958$ ,  $\text{RMSEA} = .031$ ,  $\text{NFI} = .985$ ,  $\text{CFI} = .998$ ), and the respecified model fits the data well.

## Overall confirmatory factor analysis of individual performance

Based on the results of the respecified models resulting from the first-order CFAs, an overall CFA was conducted with all items to assess model fit and examine construct validity. The output of the overall CFA model indicated that the observed indicators' regression weights were statistically significant ( $p < 0.001$ ), and that almost all indicators' factor loadings exceeded the level for modest fit (.70). However, other fit indices of the overall CFA failed to achieve the recommended levels ( $\chi^2 = 226.309$ ,  $\chi^2/\text{df} = 1.985$ ,  $\text{RMSR} = .067$ ,  $\text{GFI} = .877$ ,  $\text{AGFI} = .834$ ,  $\text{RMSEA} = .072$ ,  $\text{NFI} = .884$ ,  $\text{CFI} = .938$ ). Because some fit indices did not reach the thresholds, a series of modification processes

were used to improve the model fit, including the deletion of two observed indicators (OCBO2 and IRP7) from the original model because they correlated with other unobserved constructs, and also covaried with other constructs' observed indicators. Model fit indices improved in the respecified model ( $\chi^2 = 160.884$ ,  $\chi^2/df = 1.871$ ,  $RMSR = .062$ ,  $GFI = .900$ ,  $AGFI = .860$ ,  $RMSEA = .068$ ,  $NFI = .904$ ,  $CFI = .953$ ), and all regression weights significantly loaded on their construct ( $p < 0.001$ ). Additionally, all latent variables were statistically correlated with others ( $p < 0.001$ ). The factor loadings for all observed indicators in the respecified model are presented in Fig. 1.

Figure 2 shows the results of the second-order CFA of individual performance, which consists of three dimensions: in-role performance and the two types of extra-role performance—OCBI and OCBO. The fit indices were the same as in the respecified overall CFA of individual performance. Additionally, Fig. 2 indicates that the standardized regression weights of the three first-order constructs met the recommended level: OCBI (.66), OCBO (.68), and IRP (.94).

### Test of research hypotheses

Hypothesis 1 states that the two dimensions of the construct of extra-role performance—OCBI and OCBO—are empirically distinct and independently contribute to an overall construct of extra-role performance. As shown in Fig. 3, all factor loadings are above the minimum requirement, and all regression weights are statistically significant ( $p < 0.001$ ). Additionally, the findings indicate that fit indices ( $\chi^2 = 70.629$ ,  $\chi^2/df = 2.140$ ,  $RMSR = .077$ ,  $GFI = .933$ ,  $AGFI = .888$ ,  $RMSEA = .068$ ,  $NFI = .918$ ,  $CFI = .954$ ) met the recommended levels. Overall, the findings indicate that the two dimensions of extra-role performance are empirically distinct and independently contribute to a multi-dimensional construct of extra-role performance.

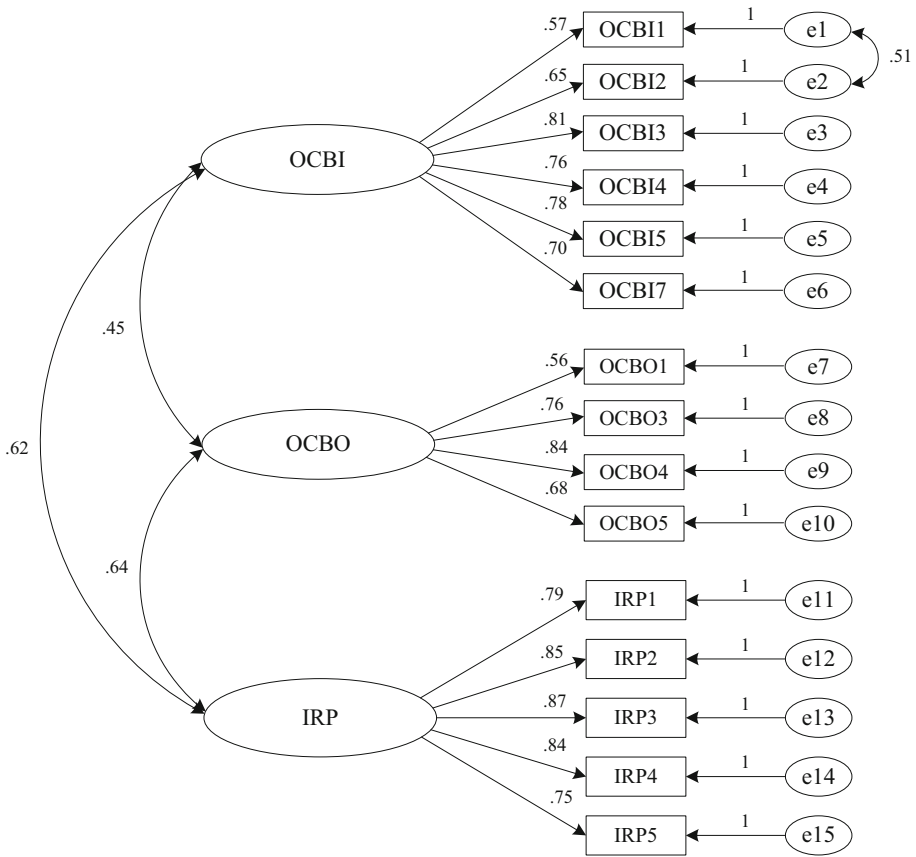
For conducting further analysis to examine convergent validity, this study employed variance extracted (VE) and construct reliability (CR). As Hair et al. (2006) point out that a construct has convergent validity when the statistics for VE and CR are above .50 and .70, respectively. The VE values for the two dimensions were .51 ( $VE_{OCBI}$ ) and .51 ( $VE_{OCBO}$ ); CR values for the two dimensions were .87 ( $CR_{OCBI}$ ) and .80 ( $CR_{OCBO}$ ), respectively. Thus, the two statistics supported the convergent validity of the construct of extra-role performance.

Table 2 presents the results regarding the test of discriminant validity for the two dimensions of extra-role performance. It shows that variance extracted (VE) values for OCBI and OCBO were both higher than the squared correlation estimate between the two constructs,<sup>5</sup> thus supporting for the discriminant validity of the construct of extra-role performance.

These results indicate that the two dimensions of extra-role performance have construct validity, examined in terms of discriminant and convergent validity. Thus, Hypothesis 1 was supported.

Hypothesis 2 stated that the three dimensions of individual performance—in-role performance and the two types of extra-role performance—are empirically distinct and independently contribute to an overall construct of individual performance. The output of

<sup>5</sup> To test discriminant validity, this study used Fornell and Larcker's (1981) method, which compares VE for the two constructs with the square of correlation between the two constructs. Fornell and Larcker (1981) argue that when the two VE values are greater than the squared correlation between the two constructs, the construct has discriminant validity.



**Fig. 1** Overall confirmatory factor analysis of individual performance

the second-order CFA of individual performance indicates that all observed indicators had significant factor loadings on their first-order constructs, and all first-order constructs had significant factor loadings on their second-order construct. In addition, as can be seen in Fig. 2, the factor loadings of all indicators and first-order constructs achieved the thresholds levels.

Further investigations were also employed to assess convergent validity. Variance extracted (VE) values for the three dimensions were .51 ( $VE_{OCBI}$ ), .51 ( $VE_{OCBO}$ ), .86 ( $VE_{IRP}$ ); and construct reliability (CR) values for the three dimensions were .83 ( $CR_{OCBI}$ ), .74 ( $CR_{OCBO}$ ), and .93 ( $CR_{IRP}$ ). Thus, the construct appears to have convergent validity. To assess discriminant validity, additionally, VE for each set of two constructs was compared with the square of the correlation between the two constructs. The results, presented in Table 3, indicate that each first-order construct contributes distinctively to the overall construct of individual performance.

The results of these analyses of the construct validity of individual performance suggest that the two types of extra-role performance and in-role performance have convergent and discriminant validity. Thus, Hypothesis 2 was supported.

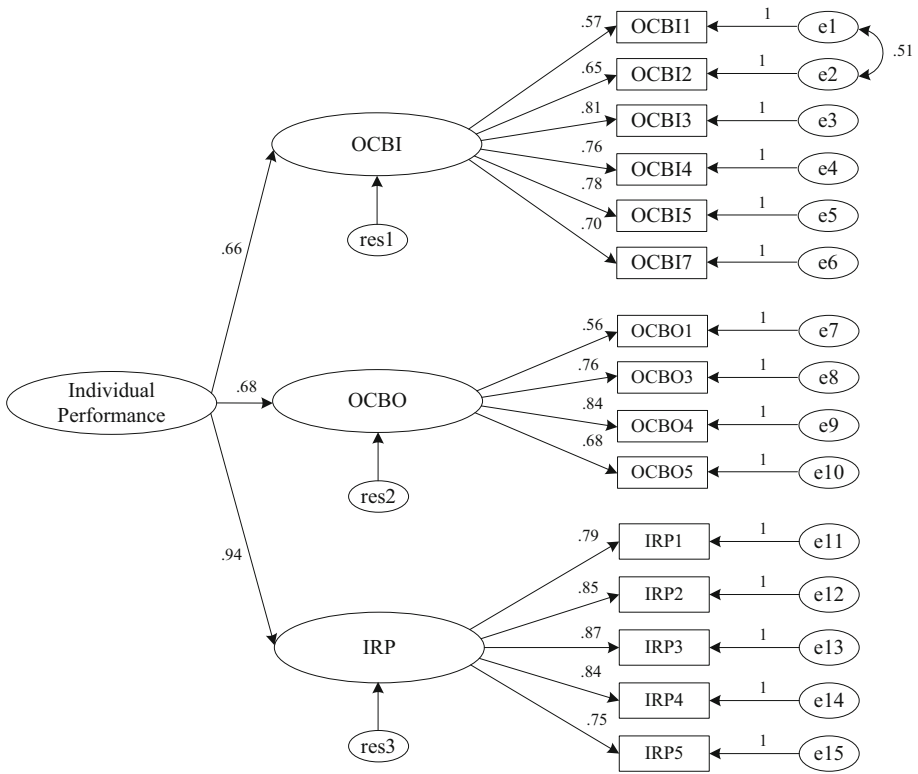


Fig. 2 Second-order confirmatory factor analysis of individual performance

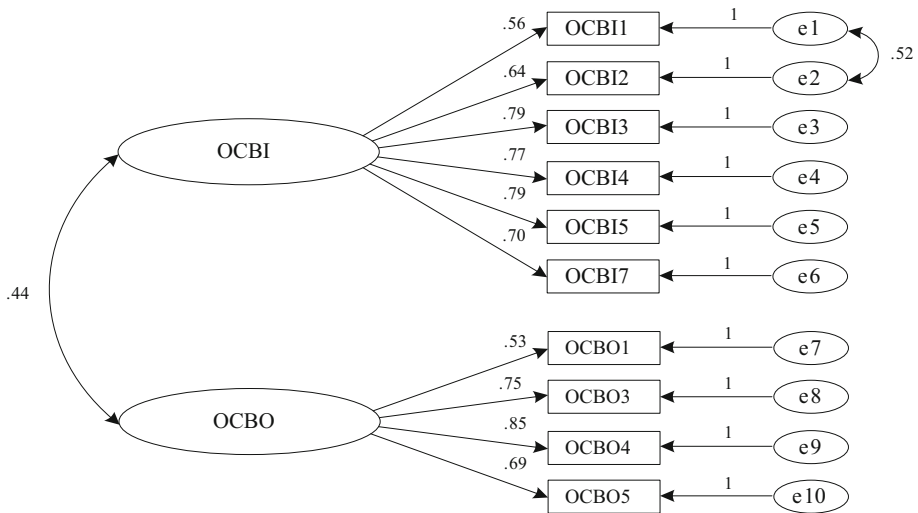


Fig. 3 Overall confirmatory factor analysis of extra-role performance

**Table 2** Testing discriminant validity of extra-role performance

	VE	<i>r</i>	<i>r</i> <sup>2</sup>
OCBI ↔ OCBO	OCBI = .51 OCBO = .51	.44	.19

**Table 3** Testing discriminant validity of individual performance

	VE	<i>r</i>	<i>r</i> <sup>2</sup>
OCBI ↔ IRP	OCBI = .51 IRP = .86	.62	.38
OCBI ↔ OCBO	OCBI = .51 OCBO = .51	.45	.20
IRP ↔ OCBO	IRP = .86 OCBO = .51	.64	.41

## Discussion

### Implications

Overall, the results of the analyses presented here support the construct validity of the higher-order constructs, and indicate that the three dimensions of the construct are empirically distinct and contribute to an overall construct of individual performance. Although there have been debates regarding the dimensionality of the construct in the field of management, this study found empirical support for the multidimensionality of the construct, as well as for the validity of the three underlying dimensions within public sector organizations. Findings from the measurement models will be briefly discussed.

The findings indicated that the three dimensions of individual performance (i.e., two dimensions of extra-role performance and one dimension of in-role performance) loaded on their higher-order construct ( $p < 0.001$ ) (see Appendix Tables 4, 5), and that the correlation estimates among the dimensions were moderate (see Fig. 1). In addition, the values of variance extracted and construct reliability met the threshold values. Equally, the test of discriminant validity indicated that the variance extracted for each pair of the dimensions was above the squared correlation estimates between the two dimensions (see Table 3). In sum, the findings supported the extant literature's argument that overall individual performance can be explained by both in-role and extra-role performance (Allen and Rush 1998; Orr et al. 1989; Williams and Anderson 1991), and support the argument that public sector organizations should begin to conceptualize and assess individual performance as a multidimensional construct that includes both in-role and extra-role performance. These findings imply that future public management research needs to consider the importance of extra-role performance as an element in the construct of individual performance.

This study also examined whether the two types of extra-role performance—OCBI and OCBO—are empirically distinct constructs. The findings showed that all observed indicators' regression weights appropriately loaded on their first-order constructs ( $p < 0.001$ ) (see Appendix Tables 6, 7). In addition, further tests of construct validity (i.e., variance extracted and construct reliability) were above the threshold values, and the correlation

estimate ( $r = .44$ ,  $p < 0.001$ ) between the two constructs was moderate (Appendix Tables 6, 7). These results support the argument that the two dimensions of the construct of extra-role performance are distinct and independent. Supporting the construct of extra-role performance as a two-factor construct, this study found that the model fit indices of the two-factor model ( $\chi^2 = 39.404$ ,  $\chi^2/df = 1.516$ , RMSR = .053, GFI = .956, AGFI = .924, RMSEA = .052, NFI = .945, CFI = .980) are better than those of the single-factor model ( $\chi^2 = 248.666$ ,  $\chi^2/df = 9.210$ , RMSR = .150, GFI = .740, AGFI = .566, RMSEA = .208, NFI = .656, CFI = .677).

### Limitations of this study and direction for future research

There are some limitations in this study. First of all, it was conducted with a limited sample—employees of the largest local government in Korea. This may undermine the external validity of the findings. Another one is about model specification. We employed several modification processes to develop the final model of individual performance. As indicated in Fig. 2, this study deleted several observed indicators (e.g., OCBI6) to increase model fit indices, as well as to improve the construct validity of the constructs in the process of conducting the confirmatory factor analyses. While the literature has commonly supported the use of modification processes to increase model fit and to improve construct validity in structural equation modeling, researchers also argue that such modifications should be based on theoretical grounds because they result in information loss from the original model. With little theoretical consideration in the process of modification, we suggest that the respecified model of individual performance provides a better fit than the model originally proposed. Thus, the construct validity and model fits of the respecified model need to be reexamined using additional data. Based on these limitations, this study offers a specific suggestion that future research needs to collect data from several different samples from different public organizations to examine the construct validity and model fits of the respecified model of individual performance.

### Conclusion

Both researchers and practitioners in the public sector have considered individual performance to be an important outcome variable in public management. As this study points out, however, few studies of individual performance in the public sector, if any, have examined both in-role and extra-role performance, even though some researchers have argued that an integrative approach is necessary to understand overall individual performance. This study found not only that extra-role performance comprises two types of organizational citizenship behavior—OCBI and OCBO—but also that the individual performance should be understood and measured as a multidimensional construct comprising two types of behavioral performance—in-role and extra-role performance. Overall, the findings of this study suggest that, in public sector organizations, individual work performance should be examined and assessed as a multidimensional construct, consisting of both in-role and extra-role performance.

### Appendix 1: Outputs of second-order CFA of individual performance

See Tables 4 and 5.

**Table 4** Regression weights and standardized regression weights

	Unstandardized estimate	SE	CR	<i>p</i>	Standardized estimate
OCBI ← individual performance	1.000				.655
OCBO ← individual performance	1.067	.229	4.664	***	.682
IRP ← individual performance	1.853	.375	4.947	***	.940
OCBI1 ← OCBI	1.000				.572
OCBI2 ← OCBI	1.052	.108	9.770	***	.649
OCBI3 ← OCBI	1.471	.188	7.818	***	.806
OCBI4 ← OCBI	1.397	.185	7.570	***	.760
OCBI5 ← OCBI	1.373	.179	7.685	***	.780
OCBI7 ← OCBI	1.134	.157	7.207	***	.700
OCBO1 ← OCBO	1.000				.559
OCBO3 ← OCBO	1.446	.201	7.204	***	.756
OCBO4 ← OCBO	1.398	.186	7.506	***	.841
OCBO5 ← OCBO	1.143	.169	6.766	***	.676
IRP1 ← IRP	1.000				.788
IRP2 ← IRP	.950	.072	13.116	***	.855
IRP3 ← IRP	1.092	.081	13.418	***	.870
IRP4 ← IRP	1.074	.083	12.893	***	.843
IRP5 ← IRP	.940	.085	11.091	***	.749

**Table 5** Covariance and correlation

	Estimate	SE	CR	<i>p</i>	Correlation estimate
e1 ↔ e2	.277	.049	5.603	***	.510

## Appendix 2: Outputs of overall CFA of extra-role performance

See Tables 6 and 7.

**Table 6** Regression weights and standardized regression weights

	Unstandardized estimate	SE	CR	<i>p</i>	Standardized estimate
OCBI1 ← OCBI	1.000				.558
OCBI2 ← OCBI	1.064	.112	9.532	***	.641
OCBI3 ← OCBI	1.482	.198	7.499	***	.792
OCBI4 ← OCBI	1.461	.197	7.415	***	.775
OCBI5 ← OCBI	1.418	.190	7.472	***	.787
OCBI7 ← OCBI	1.168	.166	7.026	***	.703
OCBO1 ← OCBO	1.000				.534
OCBO3 ← OCBO	1.491	.219	6.796	***	.746

**Table 6** continued

	Unstandardized estimate	SE	CR	<i>p</i>	Standardized estimate
OCBO4 ← OCBO	1.483	.210	7.065	***	.852
OCBO5 ← OCBO	1.225	.187	6.550	***	.693

**Table 7** Covariance and correlations

	Estimate	SE	CR	<i>p</i>	Correlation estimate
OCBI ↔ OCBO	.128	.034	3.746	***	.436
e1 ↔ e2	.289	.051	5.703	***	.521

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