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Groen, B.A.C.; Wilderom, C.P.M.; Wouters, M.J.F.

DOI
10.1002/hrm.21762

Publication date
2017

Document Version
Final published version

Published in
Human Resource Management

HIGH JOB PERFORMANCE THROUGH CO-DEVELOPING PERFORMANCE MEASURES WITH EMPLOYEES

BIANCA A. C. GROEN, CELESTE P. M. WILDEROM, AND MARC J. F. WOUTERS

According to various studies, employee participation in the development of performance measures can increase job performance. This study focuses on how *this job performance elevation occurs. We hypothesize that when employees have participated in the development of performance measures, they perceive these measures to be of higher quality, which in turn elevates their attitudes toward, perceived social norms for, and perceived control over performing well in their jobs. Based on the theory of planned behavior, the latter three factors are hypothesized to increase job performance. Survey data from 95 employees as well as 88 of their managers were analyzed using structural equation modeling. Employee participation in developing performance measures is found to be related to job performance, via perceived measurement quality and employees' perceived control over performing well. We discuss the practical and theoretical implications of these findings, including the limitations of this study's design, and sketch a number of future research paths in this area. © 2015 Wiley Periodicals, Inc.*

Keywords: theory of planned behavior, job performance, employee participation in the development of performance measures, quality of performance measures, perceived control

Employee participation is an important topic in human resource management (HRM) research (e.g., Wilkinson & Fay, 2011). It means that managers intentionally provide opportunities for lower-level employees to have a voice in key areas of organizational functioning (Glew, O'Leary-Kelly, Griffin, & Van Fleet, 1995). Meta-analyses have revealed many positive performance effects of participation (Combs, Liu, Hall, & Ketchen, 2006; Cotton, Vollrath, Froggatt, Lengnick-Hall, & Jennings, 1988; Derfuss, 2009; He & King, 2008; Miller & Monge, 1986; Rodgers & Hunter, 1991; Van De Voorde, Paauwe, & Van Veldhoven, 2012; Wagner, 1994; Wagner & Gooding, 1987; Wagner, Leana, Locke, & Schweiger, 1997).

Despite the large number of studies on employee participation, few of them have investigated *how* these beneficial participation-performance effects are achieved. To explain how

Correspondence to: Bianca Groen, University of Amsterdam Business School, P.O. Box 15953, 1001 NL Amsterdam, The Netherlands, Phone: +31 20 525 6306, E-mail: b.a.c.groen@uva.nl

Human Resource Management, January–February 2017, Vol. 56, No. 1. Pp. 111–132

Published online in Wiley Online Library (wileyonlinelibrary.com).
DOI:10.1002/hrm.21762

HRM practices—such as employee participation—affect job performance, researchers increasingly focus on employees' perceptions of these practices (e.g., Alfes, Truss, Soane, Rees, & Gatenby, 2013; Kehoe & Wright, 2013; Nishii & Wright, 2008). Employees' perceptions of HRM practices are important because the implementation of HRM practices by the HRM department or the line managers will affect outcomes, such as better job performance, only if the employees are aware of these practices (Aryee, Walumbwa, Seidu, & Otaye, 2012; Brewster, Gollan, & Wright, 2013; Den Hartog, Boon, Verburg, & Croon, 2013). Given this dependence, the present study focuses on employee perceptions of their own participation in relation to their job performance.

The current study examines employee participation in the development of performance measures.

Performance measures *quantitatively express job performance, including both individual and group measures.*

When investigating how employee participation can lead to positive effects, one should be specific about the type of participation studied (Cawley, Keeping, & Levy, 1998; Jeong, 2006). The current study examines employee participation in the development of performance measures. *Performance measures* quantitatively express job performance, including both individual and group measures. Such measures comprise, for example, client satisfaction, efficiency, and the amount of work completed in a certain amount of time. We define *employee participation in developing performance measures* as the extent of influence employees feel they have had on the design, implementation, and maintenance of the performance measures they are measured by. Such participation includes goal or target setting, as well as the co-development of other features of performance measures such as name, purpose, calculation formula, frequency of measuring, data sources, and responsibilities (Neely, Bourne, Mills, Platts, & Richards, 2002; Neely, Richards, Mills, Platts, & Bourne, 1997). The development of these features should not only take place in the initial design and implementation phase; to remain relevant, the measures should also be reviewed and maintained while they are in use (Bourne, Mills, Wilcox, Neely, & Platts, 2000).

Prior studies found positive effects of employee participation in the development of performance measures on the actual performance of employees and work units (e.g., Groen, Wouters, & Wilderom, 2012a; Hunton & Gibson, 1999; Kleingeld, Van Tuijl, & Algera, 2004). Most scholars attribute these results to employee behavior but have not investigated this specifically. For instance, Kleingeld et al. (2004) assume that cognitive benefits (e.g., a better understanding of job priorities and task strategies) and motivational gains (e.g., greater commitment to the performance measures, as well as the offered feedback and goals) explain the positive effects on job performance. Some studies on employee participation in *goal setting* provide empirical support for these cognitive and motivational arguments (Latham, Winters, & Locke, 1994; Wagner et al., 1997); other studies also include the social effects of participation (Erez & Arad, 1986; Jeong, 2006). It was Jeong (2006) who noted that one should include cognitive, motivational, *and* social factors to fully explain the mechanisms between participation and beneficial outcomes—which in our study encompasses co-developing performance measures and the actual rating of job performance. Similar factors have been investigated in a wider group of studies linking performance measurement to performance (e.g., Birnberg, Luft, & Shields, 2007; Burney, Henle, & Widener, 2009; Collins, 1982; De Leeuw & Van den Berg, 2011; Gruman & Saks, 2011; Hall, 2008; Ilgen, Fisher, & Taylor, 1979; Luckett & Eggleton, 1991; Webb, 2004).

The main goal of this study is to examine how *employee participation in developing performance measures* and *job performance* are linked not only through cognitive, motivational, and social factors, but also through perceived measurement quality. We define *job performance* as the extent to which employees meet their job requirements (Podsakoff & Mackenzie, 1989). By blending the literature on employee participation, performance measurement, and the theory of planned behavior, we aim to offer new insights into *how* employee-developed performance measures may help organizations improve job performance. These insights are necessary for organizations and HRM professionals to reap the full benefits of employee participation. The present study is also important from an academic point of view, because the outcomes will point out which set of factors is the most important to research in the realm of enhancing employees' job performance.

As a first contribution, we introduce *perceived measurement quality* as a promising construct to explain the link between *employee participation in developing performance measures* and *job performance*. *Perceived measurement quality* is defined as the extent to which employees find the performance measures sensitive to their actions, precise in measuring relevant aspects of their performance, and verifiable (Moers, 2006). It is

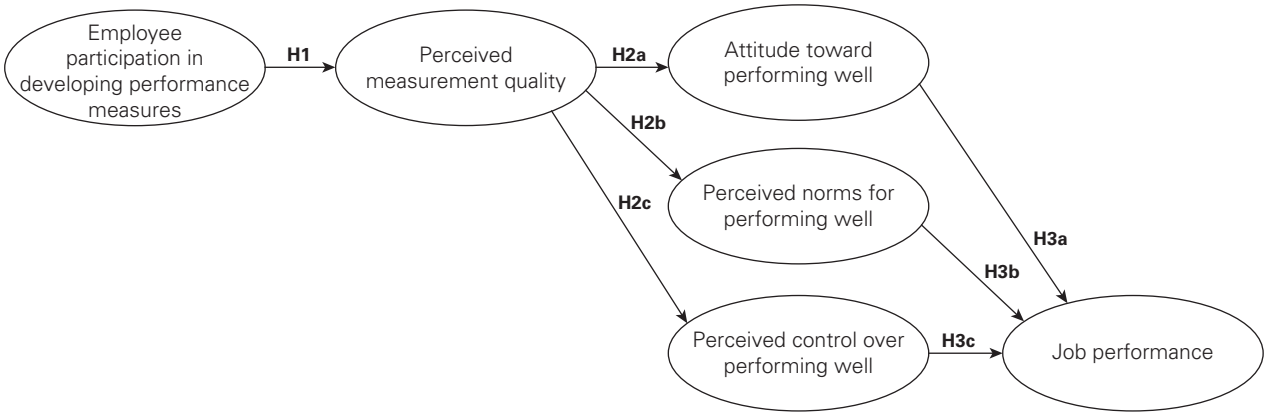
important to take such measurement properties seriously, because they determine whether the performance measures correctly reflect employee performance (e.g., Banker & Datar, 1989). In this article, we find that nonmanagerial employees' perceptions of measurement quality are crucial. Hence, this study's contribution is the recognition of including *perceived measurement quality* as an explanation for variance in job performance.

Second, the theory of planned behavior (Ajzen, 1991)—which encompasses the three earlier introduced cognitive, motivational, and social factors—is used to explain how better *perceived measurement quality* can increase *job performance*. To our knowledge, the theory of planned behavior has not been used to explain *job performance* yet, even though Fishbein and Ajzen (2010, p. 3) suggest this theory is extremely relevant in this regard. The theory of planned behavior distinguishes three antecedents of any particular kind of behavior. The first, attitude, is a motivational construct defined as an individual's view on a behavior. The second antecedent, perceived social norms, is a social construct and comprises the extent to which employees believe significant others expect them to behave in a certain way. The third construct, perceived behavioral control, is cognitive in nature and refers to the extent to which one sees oneself capable of performing the behavior.

This study uses a sample of employee-manager dyads from various jobs, organizations, and industries to examine the link between *employee participation in developing performance measures* and *job performance*. The next section explains the theoretical model through which these two constructs are related. Subsequently, the survey method is further explained, after which the structural equation modeling results are given. The article closes with a discussion of the study's theoretical and practical implications, limitations, and suggestions for future research.

Hypotheses

Figure 1 depicts the hypothetical model and the definitions of its constructs. First, we hypothesize that when employees have an influence on the design of performance measures, they will



Construct	Definition
Employee participation in developing performance measures	The extent of influence employees feel they have had on the design, implementation, and maintenance of the performance measures they are measured by (Abernethy & Bouwens, 2005; Bourne et al., 2000)
Perceived measurement quality	The extent to which employees find the performance measures sensitive to their actions, precise in measuring relevant aspects of their performance, and verifiable (Moers, 2006)
Attitude toward performing well	The employees evaluation regarding always meeting all job requirements (Fishbein & Ajzen, 2010)
Perceived norms for performing well	The extent to which employees perceive significant others as wanting them to always meet all the job requirements and the extent to which these others always try to meet all job requirements (Fishbein & Ajzen, 2010)
Perceived control over performing well	The extent to which employees believe to be capable of always meeting all job requirements (Fishbein & Ajzen, 2010)
Job performance	The extent to which employees meet their job requirements according to their manager (Podsakoff & Mackenzie, 1989)

FIGURE 1. Hypothetical Model and Construct Definitions

consider them to be of better quality. Next, *perceived measurement quality* is hypothesized to be related to employees' *attitudes toward*, *perceived norms for*, and *perceived control over performing well* in their jobs. These three constructs, in turn, are hypothesized to be positively related to *job performance*. Below, we will elaborate on the theory from which we derived these hypotheses.

Employee Participation in Developing Performance Measures and Perceived Measurement Quality

Employee participation in developing performance measures is defined as the extent of influence employees feel they have had on the design, implementation, and maintenance of the performance measures they are measured by (cf. Abernethy & Bouwens, 2005; Bourne et al., 2000). This article deals purely with employee co-development of the *instrument* that managers, afterward, use to assess employees' performance. Employee participation in developing performance measures means that employees have an influence on the various features of performance measures, such as what exactly is measured, the calculation formula, and the frequency of measuring (Neely et al., 1997, 2002). Participation in the performance appraisal itself—which has also often been studied (e.g., Cawley et al., 1998; Koufteros, Verghese, & Lucianetti, 2014; Pichler, 2012)—is something different and falls outside the scope of this article.

Employee participation in developing performance measures leads to more valid performance measures because the measures are shaped by the detailed operational knowledge of the employees themselves.

We specifically investigate the participation of nonmanagerial employees who create actual products or services of the organization, such as operators in a factory, construction workers on site, doctors working with patients, university professors, and so on. The work of these employees in line positions is typically very context specific, making it challenging to design meaningful performance measures that validly reflect work activities (McKinnon & Bruns, 1992). To design sound performance measures, it is important to use the valid, unique, and relevant information and insights that nonmanagerial employees have about their own jobs (Roberts, 2002). In the participative process of developing performance measures, these employees can help develop measures matching their own needs or wishes within the boundaries established by their managers, including, for instance, the strategic priorities the performance measures should reflect (Groen et al., 2012a). Prior research has shown that if performance measures are developed in close consultation with employees, not only are these employees more positive about the developed performance measures (Abernethy & Bouwens, 2005; Wilderom, Wouters, & Van Brussel, 2007; Wouters, 2009), but they also find the measures' feedback more useful (Kleingeld et al., 2004). Moreover, employees who view co-developed performance measures as a credible and powerful resource are more likely to accept their output (Cawley et al., 1998; Luckett & Eggleton, 1991).

Some employees may try to use the opportunity to participate to "game" the system, that is, "take actions that increase pay-outs … without improving actual performance" (Baker, 1992, p. 600). Yet, according to the social exchange theory, few employees are likely to do so; once they are given the opportunity to participate, they are likely to feel they are being treated fairly, which makes them want to treat their employer fairly in return (Brown, Evans, & Moser, 2009; Cropanzano & Mitchell, 2005; Fehr & Gächter, 2000). Hence, while designing the performance measures as well as post design in their daily work, employees are less likely to game the system. Furthermore, *employee participation in developing performance measures* leads to more valid performance measures because the measures are shaped by the detailed operational knowledge of the employees themselves (Groen et al., 2012a). Thus, participatively developed performance measures include many context-specific idiosyncrasies, which diminish the room for postdesign gaming.

High-quality performance measures are not only important for managers, but also for nonmanagerial employees. Here, we would like to reiterate the definition of *perceived measurement quality*: the extent to which employees find the performance measures *sensitive* to their actions, *precise* in measuring relevant aspects of their performance, and *verifiable* (see Figure 1). All three parts of the definition can be beneficial for nonmanagerial employees. Employees usually want the measures to be sensitive to their productive actions—or at least to favorable actions—because this means their efforts will be recognized by their superiors. Moreover, employees want the measures to be precise, because this means they can actually influence the factors measured by the performance measures (Keeping & Levy, 2000). And finally, employees want the performance measures to be verifiable: they want to rely on numbers that can be corroborated and objectively checked (Englund & Gerdin, 2014; Jordan & Messner, 2012). Thus,

we assume that when employees participate in the development of their own performance measures, they have good reasons for trying to increase the quality of those measures.

Hypothesis 1: Employee participation in developing performance measures is positively related to perceived measurement quality.

Outcomes of Perceived Measurement Quality

We expect *perceived measurement quality* to be related to three different types of employee perceptions: their *attitude toward, perceived norms for*, and *perceived control over performing well*. *Attitude toward performing well* is defined here as the employee's evaluation regarding always meeting all job requirements (see Figure 1). We expect a relation with attitude toward performing well for several reasons. First, when the performance measures are of better quality, employees can engage in clearer discussions with their managers about their performance, which may increase their autonomous work motivation (Deci, Koestner, & Ryan, 1999; Eisenberger & Cameron, 1996; Kuvaas, 2006, 2007) and, in turn, their attitude to perform well at work (Hagger & Chatzisarantis, 2007, 2009; Hagger, Chatzisarantis, & Harris, 2006). Second, if employees believe performance is measured correctly, they will find it more meaningful to increase their performance and thus are more willing to exert themselves to reach their performance targets (Fried & Ferris, 1987; Hackman & Oldham, 1976; Johns, Xie, & Fang, 1992; Sheldon & Elliot, 1998). Third, high-quality performance measures are more likely to be used for monitoring and feedback (Groen, Wouters, & Wilderom, 2012b), which is known to influence employees' attitudes toward job-related behaviors (Siero, Boon, Kok, & Siero, 1989). Additionally, when employees perceive performance feedback to be accurate, they are more eager to respond positively to that feedback (Kinicki, Prussia, Wu, & McKee-Ryan, 2004). Finally, *perceived measurement quality* also increases the fairness experienced by employees, which in turn may increase their attitude toward performing well (Burney et al., 2009).

In this study's context, *perceived norms for performing well* is defined as the extent to which employees perceive significant others as expecting them to always meet all the job requirements and the extent to which these others themselves always try to meet all job requirements (cf. Bleakley & Hennessy, 2012; Fishbein & Ajzen, 2010; see Figure 1). This definition of *perceived norms for performing well* consists of two elements, which Fishbein and Ajzen (2010) term *injunctive* and *descriptive* norms. "Injunctive norms refer to perceptions concerning what should or ought to be done with respect to performing a given behavior, whereas descriptive norms refer to perceptions that others are or are not performing the behavior in question" (Fishbein & Ajzen, 2010, p. 131). High-quality performance measures may increase *injunctive* norms because they clarify the requirements of someone's work role (Collins, 1982; Hall, 2008). Performance measures reflect the opinions of those who have been involved in developing them. Employees will see performance measures as a reflection of what they should be doing, according to these significant others. Hence, if the performance measures are of better quality, injunctive-behavioral expectations are more clearly communicated, and thus employees will know better what they are expected to do to meet their job requirements. Consistent with this view, as with *attitudes toward performing well*, *perceived norms for performing well* were found to be influenced by *perceived measurement quality* through increased autonomous motivation (Hagger & Chatzisarantis, 2007, 2009). Furthermore, if the quality of the performance measures is better, not only injunctive but also *descriptive* norms are enriched. As people generally fear the negative consequence of being different (Brehm, Kassin, & Fein, 2002), employees will feel the social pressure to perform at a level equivalent to their peers. Employees take note of how well their peers are performing, especially when the performance measures are of high quality, meaning a descriptive norm has been invoked. Correspondingly, Siero et al. (1989) showed a positive effect of monitoring and feedback on the normative beliefs of mail-van drivers.

We expect perceived measurement quality to be related to three different types of employee perceptions: their attitude toward, perceived norms for, and perceived control over performing well.

Perceived control over performing well is defined as the extent to which employees believe to be capable of always meeting all job requirements (cf. Fishbein & Ajzen, 2010). *Perceived measurement quality* is hypothesized to affect *perceived control over performing well* for several reasons. High-quality performance measures communicate to employees how one is to excel in one's work (Melnyk, Stewart, & Swink, 2004). Hence, the better the *perceived measurement quality*, the better employees know the "why and how" of performing well in their jobs (Hall, 2008). Moreover, performance measures give employees feedback about past performance, which helps increase their knowledge

and abilities to perform better (Kluger & DeNisi, 1996; Sprinkle, 2003; Van Veen-Dirks, 2009). Employees are more likely to accept the feedback provided by performance measures when they perceive them as a credible resource (Ilgen et al., 1979). Prior research has shown a positive relationship between constructs similar to *perceived measurement quality* and employees' belief in their capacity to perform well in their jobs, such as the extent to which they can influence outcomes at work (Hall, 2008; Spreitzer, 1995, 1996). Hence, we hypothesize the following:

Hypothesis 2: Perceived measurement quality is positively related to employee (a) attitude toward, (b) perceived norms for, and (c) perceived control over performing well.

Job Performance

According to the theory of planned behavior, the extent to which people perform any kind of behavior can be explained by their attitude, perceived norms, or perceived control to perform the behavior.

According to the theory of planned behavior, the extent to which people perform any kind of behavior can be explained by their attitude, perceived norms, and/or perceived control to perform the behavior. Empirical support for the applicability of the theory of planned behavior to a broad range of behavior has been documented in numerous studies and meta-analyses (Fishbein & Ajzen, 2010). The theory has been applied mainly to health behaviors such as smoking cessation or using condoms (Bartholomew, Parcel, Kok, & Gottlieb, 2001; Fishbein & Ajzen, 2010), but it has also been used in HRM and organizational behavior literatures (e.g., Dunn & Schweitzer, 2005; Gagné, 2009; Hill, Mann, & Wearing, 1996; Jimmieson, Peach, & White, 2008; Westaby, Probst, & Lee, 2010). While Fishbein and Ajzen (2010) have pointed to the relevance of the theory of planned behavior to *job performance,* this kind of application of the theory has, as far as we know, not been pursued. We expect that all three key variables of this theory are related to *job performance*. Next, we offer a specific rationale for each proposition.

According to Fishbein and Ajzen (2010, p. 17), *attitude toward performing well* is a form of job satisfaction. The relationship between job satisfaction and job performance has often been studied and meta-analyses find a significant effect between the two (Judge, Thoresen, Bono, & Patton, 2001; Kinicki, McKee-Ryan, Schriesheim, & Carson, 2002; Riketta, 2008). The definition of *attitude toward performing well* resembles the construct "work motivation": "a set of energetic forces that originate both within as well as beyond an individual's being, to initiate work-related behavior, and to determine its form, direction, intensity, and duration" (Pinder, 1998, p. 11). Various theories and studies of work motivation have claimed that employees who are highly motivated will perform better in their jobs (e.g., Muchinsky, 2003; Spector, 2006a). Moreover, motivation-enhancing HRM practices are found to have positive meta-analytical effects on many types of performance outcomes (Subramony, 2009). Based on this evidence, we expect a positive association between *attitude toward performing well* and *job performance*.

Although most theories and research on HRM and organizational behavior regard cognitive and motivational factors to be the prime sources of positive performance effects of participation (e.g., Cawley et al., 1998; Kleingeld et al., 2004; Wagner et al., 1997), we argue in accordance with the theory of planned behavior, that social factors may be just as important. Erez and Arad (1986) took a similar stance in a study of why participation in goal setting may lead to better performance, and found support for the mediating role of social factors in addition to cognitive and motivational factors. The social factors studied here are the social norms set by significant others. Significant others can be anyone who is important to the employee, such as his or her superior, coworkers, or even clients. Significant others will influence the behavior of employees when the employees believe these others have the power to give rewards or punishments; have the right to prescribe behavior; have the knowledge, expertise, skills, or abilities; or feel a sense of identification with the other (Fishbein & Ajzen, 2010, p. 130). When people do not act according to the norms of their significant others, they risk repercussions such as stigmatization or rejection (Muchinsky, 2003). All in all, employees seem more eager to perform well if their significant others do or tell them to perform well. Merriman and Sen (2012) give an example of how normative beliefs can influence job performance. They found that managers' normative beliefs influence their investment decisions and thus their performance.

Moreover, *perceived control over performing well* may also be an important antecedent of job performance (Ajzen, 2012; Fishbein & Ajzen, 2010). Feeling in control of performing well implies that employees believe it is largely up to them to meet the job expectations. Clearly, if there are actual enablers or constraints in one's work, they will directly affect one's performance; however, just the *perception* of being in control, or out of control, may affect job performance. Employees' *perceived*

control over performing well will determine to what extent people exploit the real control potential available. Specifically, when planning work activities, *perceived control over performing well* may influence how ambitiously targets are formulated (cf. Locke & Latham, 2002), how carefully plans are made (cf. Luszczynska & Schwarzer, 2003), and how many buffers are built in (Belkaoui, 1985). During the execution of work activities, *perceived control over performing well* may influence an employee's effort and perseverance to overcome difficulties (Ajzen, 2002). When things do not go as planned, low *perceived control over performing well* means that employees feel there is no point in even trying anymore. Even if they have the opportunity, people with low *perceived control over performing well* will try less to positively influence the situation. People who do not have such a dispiriting view of their own level of ability may actively search for opportunities to solve problems, for instance, by making use of unusual or creative ways to improve performance.

Hypothesis 3: Employee (a) attitude toward, (b) perceived norms for, and (c) perceived control over performing well are positively related to job performance.

Method

To collect data to test the hypotheses, we employed two online surveys: one among managers and a different one for a random sample of one of their followers.

Respondents

For this study we searched for pairs of managers and employees who met the following selection criteria: (1) they must have worked together in their current functions for at least one year; (2) the nonmanagerial employees had to have jobs in line positions at the lowest hierarchical level of their organizations; and (3) the manager had to use performance measures to assess the employee's actual performance. Because few organizations were found to have implemented performance measurement within their lower hierarchical levels, this last criterion in particular made it difficult to identify respondents. In such cases, it is recommended to use snowball sampling, which means that every potential participant was asked for contact details of other potential participants (Salganik & Heckathorn, 2004). Salganik and Heckatorn (2004) demonstrated that independent of one's starting point, snowball sampling leads to asymptotically unbiased samples, which are just as good as, and often even better than, random sampling methods. Our starting point for finding respondents was our own network. Some of the contacted people and organizations helped us obtain access to a larger number of people. For example, one consultancy organization sent a request to participate in this study to its complete database. Furthermore, we attempted to gain people's attention to participate in our survey by publishing three articles in professional journals and by organizing two seminars on "developing useful performance measures."

All potential respondents were first asked to complete a short online survey to verify the selection criteria. This survey asked whether they were an employee or a manager. *Managers* who agreed to participate provided the contact details of one or more of their employees, of whom we contacted one randomly. After the survey was completed by the employee, we contacted the manager (again) to complete the main survey via the Internet.[1] *Employees* who met the criteria were asked for the contact details of their managers and received the link to the employee version of the survey immediately. All respondents were assured confidential treatment of their data. Later, everyone who participated was sent the research report showing his or her personal scores, benchmarked to the average of all other participating pairs.

The initial short survey resulted in 74 managers and 21 employees (unrelated to any of the 74 managers) who were willing to participate and who met the inclusion criteria: potentially 74 + 21 = 95 pairs. Of these potential 95 pairs, all 95 employees actually completed the survey, and 88 (out of 95 = 94%) of their managers did. Table I gives an overview of the characteristics of the respondents.

For this study we searched for pairs of managers and employees who met the following selection criteria: (1) they must have worked together in their current functions for at least one year; (2) the nonmanagerial employees had to have jobs in line positions at the lowest hierarchical level of their organizations; and (3) the manager had to use performance measures to assess the employee's actual performance.

Survey Instrument

Following the guidelines of Podsakoff, MacKenzie, Lee, and Podsakoff (2003), we reduced common method bias in several ways. First, all the independent variables were based on the employees' self-reports, while we measured our dependent variable *job performance* by surveying the managers. Second, we surveyed the constructs in a different order than the order of the model, and we emphasized

TABLE I Respondent Characteristics

Characteristic		All Employees ($N = 95$)	Employees Whose Manager Responded ($N = 88$)	Managers ($N = 88$)
Sex	% male	74	73	89
	% female	26	27	11
Education	% lower	7	8	5
	% intermediate	28	28	16
	% higher	33	33	45
	% scientific	27	26	28
	% missing	5	5	6
Age	mean (SD)	39 (9.4)	39 (9.6)	45 (6.7)
Departmental tenure	mean (SD)	6.1 (6.0)	6.2 (6.1)	7.8 (6.1)
Span of control	mean (SD)	n/a	n/a	35 (51)
# Employees in organization	mean (SD) min/max			5,582 (23,467) 7/150,000

the confidentiality of the answers. Moreover, each survey page contained only items concerning the same construct, which led to higher-quality data because it helped the respondents understand the items better (Frantom, Green, & Lam, 2002). Our third effort to reduce common method bias was to add a separate introduction to the questions concerning each construct. Finally, we checked statistically for the presence of common method bias, based on Spector (2006b) and Podsakoff et al. (2003); see the Results section.

We pretested the survey among 17 employees who met the survey's inclusion criteria (cf. Anderson & Gerbing, 1991). We used Anderson and Gerbing's (1991) item-sort task and the three-step test-interview method (Hak, Van der Veer, & Jansen, 2008) for the pretest, as they are specifically designed for pretests with small samples. This helped to further shorten the survey.

All the items were in Dutch and had a 7-point fully anchored Likert scale: (1) totally disagree, (2) disagree, (3) moderately disagree, (4) neutral, (5) moderately agree, (6) agree, (7) totally agree. An overview of the items is given in the appendix. The rest of this section reports on the ways in which the constructs were measured.

We used Abernethy and Bouwens's (2005) "influence on the system design" scale to measure *employee participation in developing performance measures*, because it signifies the extent of the influence employees feel they have had on the design of the performance measures. The pretest revealed that this scale strongly correlates with a self-developed scale, consisting of the range of variable features of performance measures employees influence during the developmental process, that is, the choice of measures, the difficulty of the goals, the formulas used to calculate the performance, the frequency with which the measures are updated, the choice of who is responsible for updating the performance indicators, and how the results on the performance measures are discussed in the department (Neely et al., 1997, 2002). Furthermore, both the item-sort task and the three-step test-interview indicated that respondents were convinced both scales measured the same. In the final survey, *employee participation in developing performance measures* consisted of five items and had a Cronbach's alpha of 0.94. Both the items "I have/had influence on ongoing modifications to the design of the performance measures" and "I have/had influence on the maintenance of the performance measures" suggest that the performance measures can be adjusted when they are already in use. These items are so similar, especially in the Dutch language, that their error terms are likely to be related. Therefore, we allowed their error terms to covary.

The *perceived measurement quality* scale assessed the extent to which employees find the performance measures sensitive to their actions, precise in measuring relevant aspects of their performance, and verifiable. The Cronbach's alpha was 0.80. The scale consisted of five items from Moers's (2006) "performance measurement properties" scales. Because the pretest was insufficiently conclusive regarding which items of the original scale were valid, we included more items than intended. To ensure we would not create false positives by "cherry-picking" items that worked well with the other variables of our model, we purposively analyzed the properties of the quality items

before testing the hypotheses. We deleted the four negatively formulated items of the original scale because theoretically they were the most remote from the definition of *perceived measurement quality*.[2] Although they had the highest loadings due to their high internal consistency, collectively, they did not reflect the meaning of the construct. Moreover, the survey contained three items to address whether the performance measures manifest the input of the employees. We deleted two of these three items with the smallest item loadings from the main analyses, to avoid overrepresentation of this aspect of *perceived measurement quality*.[3] Also, a robustness check was performed by including all three "input items," while their error terms were allowed to covary.

The items for *attitude toward*, *perceived norms for,* and *perceived control over performing well* were self-constructed based on standard guidelines for constructing theory-of-planned-behavior questionnaires (Darker & French, 2009; Fishbein & Ajzen, 2010; Francis et al., 2004). Seven items were formulated for each of the three constructs before the pretest, and for the final survey we chose the best three for each. The Cronbach's alphas were 0.87 for *attitude toward performing well*, 0.86 for *perceived norms for performing well*, and 0.61 for *perceived control over performing well*. The Cronbach's alphas of *attitude toward* and *perceived norms for performing well* were adequate, but the score for *perceived control over performing well* was disappointing. This is typical for the measurement of *perceived behavioral control* (Ajzen, 2002). In hindsight, this relatively low Cronbach's alpha may be explained by the fact that two of these three items were negatively formulated. Such items have created problems in other research on the theory of planned behavior (Yzer, 2012). Therefore, consistent with most theory-of-planned-behavior research (Bleakley & Hennessy, 2012; Fishbein & Ajzen, 2010), we only used the positively formulated item to measure *perceived control over performing well* in our main analyses.[4] As a robustness check, we also analyzed the model in which this construct was measured with all three items.

We measured *job performance* with five items. They assessed the managers' view of the extent to which employees meet their job requirements. This scale is considered relevant because getting employees to meet their job requirements is the behavior that performance measures usually aim to stimulate (Williams & Anderson, 1991). The scale was initially developed by Williams and later revised and shortened by Podsakoff and MacKenzie (1989). It is applicable to all types of jobs and industries and fits our research design as well. Earlier research demonstrated that this scale is highly correlated with objective measures of performance (Burney et al., 2009). The Cronbach's alpha of this scale was 0.91.

The control variables used in our study are: employee sex, educational level, age, and organizational tenure. These demographic variables may give an alternative explanation for the differences in the ratings of job performance (cf. Ali & Davies, 2003; Ng & Feldman, 2010; Quinones, Ford, & Teachout, 1995; Roth, Purvis, & Bobko, 2012). Employees were not obliged to complete their demographic characteristics. Hence, some values are missing for the educational variable.

Statistical Analyses

Statistical analyses were performed with covariance based structural equation modeling (CBSEM), using the AMOS 18 maximum likelihood estimation. Although variance-based structural equation modeling (PLS) is often used for smaller sample sizes (Peng & Lai, 2012), recently a comprehensive series of Monte Carlo simulations showed that CBSEM is generally recommended over PLS because it compensates for measurement error and is therefore more accurate than PLS (Goodhue, Lewis, & Thompson, 2012).

In advance of the analyses, we screened the data (Kline, 2011, pp. 51–68) and found no indications of extreme collinearity. Moreover, we found neither outliers ($p < .001$) nor univariate nonnormality. However, multivariate kurtosis was high, so we used bootstrapping as a robustness check to ensure that this did not influence our results (Kline, 2011, p. 177; Nevitt & Hancock, 2001).

We measured job performance *with five items. They assessed the managers' view of the extent to which employees meet their job requirements. This scale is considered relevant because getting employees to meet their job requirements is the behavior that performance measures usually aim to stimulate.*

Anderson and Gerbing's (1988) two-step modeling approach was utilized. Compared to estimating the structural model alone, this approach has several advantages. In cases of poor model fit it is easier to find out why the model fits poorly, and it makes it possible to see if the empirical definitions of the constructs are similar for different configurations of the model (Burt, 1976). The first step of the two-step approach estimates the fit of the measurement model. The measurement model is a model in which all items are only allowed to load on their own factor and all constructs are allowed to correlate freely with each other. Once the measurement model is adequate, the structural model can

be analyzed (step 2). The difference between the structural model and the measurement model is that in the structural model the factors are not allowed to freely correlate but are related to the other factors strictly based on the hypothetical model. To assess the robustness of the found significant levels of the path coefficients, we used maximum likelihood bootstrapping with 1,999 bootstrap samples. The percentile and bias-corrected confidence intervals were set to 95%.

Significant relations are found between employee participation in developing performance measures *and* perceived measurement quality *(Hypothesis 1),* perceived measurement quality *and* perceived norms for performing well *(Hypothesis 2b),* perceived measurement quality *and* perceived control over performing well *(Hypothesis 2c), and* perceived control over performing well *and* job performance *(Hypothesis 3c).*

To determine the model fit we used chi-square, supplemented with the Bollen-Stine bootstrap, as it gives a more reliable estimate of the significance level in case the data is not multivariate normal (Nevitt & Hancock, 2001). The additional use of other model fit indices is generally recommended because chi-square is too sensitive to even minor departures from a perfect fit in complex models (Bentler, 1990). As recommended by Schreiber, Nora, Stage, Barlow, and King (2006), we used the comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA). CFI and TLI values are recommended to be higher than 0.95, and RMSEA should be lower than 0.06 (Hu & Bentler, 1999).

Results

As a first step, the measurement model was analyzed and the model fit was good (χ^2 = 241.60, *df* = 194, *p* = .01; Bollen-Stine *p* = .45; CFI = 0.96; TLI = 0.95; RMSEA = 0.05). Table II shows the standardized estimated factor loadings, and Table III the correlations between the constructs.[5] The model fit of the structural model was also good (χ^2 = 246.43, *df* = 202, *p* = .02; Bollen-Stine *p* = .48; CFI = 0.96; TLI = 0.96; RMSEA = 0.05; see Table IV, Model 1), and the factor loadings were similar to those of the measurement model. In other words, the constructs denote the same thing in both the measurement and the structural model. The standardized path coefficients of the structural model are shown in Figure 2. The bootstrap results show similar significance levels (not tabulated). Significant relations are found between *employee participation in developing performance measures* and *perceived measurement quality* (Hypothesis 1), *perceived measurement quality* and *perceived norms for performing well* (Hypothesis 2b), *perceived measurement quality* and *perceived control over performing well* (Hypothesis 2c), and *perceived control over performing well* and *job performance* (Hypothesis 3c). The model explains 16% of the variance of *perceived measurement quality*, 3% of *attitude toward performing well*, 10% of *perceived norms for performing well*, 16% of *perceived control over performing well,* and 12% of *job performance*.

We also analyzed the indirect effects between *employee participation in developing performance measures* and *job performance*. The indirect effect via *perceived measurement quality* and *attitude toward performing well* is not significant. The indirect effect via *perceived measurement quality* and *perceived norms for performing well* is significant if the bias-corrected percentile method is used (unstandardized B = 0.007, SE = 0.007, one-tailed p < .05). The indirect effect via *perceived measurement quality* and *perceived control over performing well* is significant for both the standard and the bias-corrected percentile method (unstandardized B = 0.021, SE = 0.012, one-tailed p < .01).

We added employee sex, education, age, and departmental tenure as control variables to see if the found relationships with job performance can be explained by demographic differences. Both the measurement model (χ^2 = 296.32, *df* = 258, *p* = .05; CFI = 0.97; TLI = 0.96; RMSEA = 0.04) and the structural model (χ^2 = 316.93, *df* = 282, *p* = .08; CFI = 0.97; TLI = 0.96; RMSEA = 0.04) fit well. Variances in age and education of the employee explain a significant amount of the variance in performance (R^2 increases from 0.12 in the model without control variables to 0.25 in the model with control variables). The regression weights of our hypothesized model are almost identical to our earlier results (see Table IV, Model 2).

We checked if other important variables were missing from the model, by adding direct effects between *employee participation in developing performance measures* and *attitude toward, perceived norms for* and *perceived control over performing well,* and *job performance*, respectively, and between *perceived measurement quality* and *job performance* (Shrout & Bolger, 2002). None of the direct effects were significant, and the strengths of all others relations remained the same. This probably means no correlated variables were missing.

As noted in the Survey Instrument section, we performed robustness checks regarding the measurement of *perceived measurement quality* and *perceived control over performing well*. Previously, with regard to *perceived measurement quality,* we only retained one item reflecting employee input,

TABLE II Descriptive Statistics and Factor Loadings of the Measurement Model

Latent Variables[a]	α	*N*	M	SD	Min	Max	Standardized Factor Loadings[b]	Unstandardized Factor Loadings[b]	
PARTICIPATION	0.94								
Item 1		88	3.50	1.96	1	7	0.90	1.00	***
Item 2		88	3.61	1.86	1	7	0.88	0.93	***
Item 3[c]		88	3.44	1.77	1	7	0.81	0.81	***
Item 4		88	3.23	1.69	1	7	0.91	0.87	***
Item 5[c]		88	3.45	1.74	1	7	0.83	0.82	***
QUALITY	0.80								
Item 6		88	4.23	1.69	1	7	0.50	1.00	***
Item 7		88	4.13	1.57	1	7	0.87	1.63	***
Item 8		88	4.44	1.62	1	7	0.77	1.49	***
Item 9		88	4.90	1.41	1	7	0.65	1.09	***
Item 10		88	4.68	1.53	1	7	0.52	0.94	***
ATTITUDE	0.87								
Item 11		88	5.80	0.89	3	7	0.82	1.00	***
Item 12		88	5.77	0.99	3	7	0.89	1.21	***
Item 13		88	5.77	1.00	2	7	0.80	1.11	***
NORM	0.86								
Item 14		88	5.13	1.12	2	7	0.65	1.00	***
Item 15		88	4.74	1.24	2	7	0.95	1.61	***
Item 16		88	5.19	1.13	2	7	0.85	1.32	***
CONTROL	n/a								
Item 17		88	4.69	1.21	2	7	n/a	n/a	
PERFORMANCE	0.91								
Item 18		88	5.99	1.02	2	7	0.76	1.00	***
Item 19		88	5.69	1.11	2	7	0.89	1.26	***
Item 20		88	5.47	1.12	2	7	0.83	1.20	***
Item 21		88	5.48	1.01	2	7	0.85	1.10	***
Item 22		88	5.32	1.17	2	7	0.79	1.19	***

Notes: [a]PARTICIPATION = Employee participation in developing performance measures; QUALITY = Perceived measurement quality; ATTITUDE = Attitude toward performing well; NORM = Perceived norms for performing well; CONTROL = Perceived control over performing well; PERFORMANCE = Job performance.
[b]Only the estimated factor loadings are shown in the tables. The loadings of the measures on all other constructs are set to zero.
[c]The error terms of these two items were allowed to covary: $r = 0.389$**.
***$p < .001$ (two-tailed).

but now we included the two additional items and allowed the error terms of the three items to covary. This analysis revealed similar results to the model with five items (see Table IV, Model 3). For *perceived control over performing well*, which was initially measured with just one item, we also analyzed a model with three items and found no appreciable differences (see Table IV, Model 4).

We checked for the presence of common method bias in two ways. First, we inspected the correlations between the following variables which were measured from the same source: *employee participation in developing performance measures*, *perceived measurement quality*, *attitude toward*, *perceived norms for*, and *perceived control over performing well*. They were not alarmingly high; there is no baseline level of correlations, and only a few of the correlations were significant. This means our results were unlikely to have been affected by common method bias (Spector, 2006b). As a further check, we used Podsakoff et al.'s (2003) recommendation to statistically control for common method bias by adding a latent "common method" variable, which intends to reflect one

TABLE III **Construct Variances (in parentheses on the diagonal axis) and Correlations**

		1	2	3	4	5	6	7	8	9	10
1	PARTICIPATION[a]	(3.09)***									
2	QUALITY	0.42**	(0.70)*								
3	ATTITUDE	–0.01	0.16	(0.52)***							
4	NORM	0.13	0.31*	0.24†	(0.53)**						
5	CONTROL	0.07	0.40**	0.10	0.16	(1.44)***					
6	PERFORMANCE	0.02	0.23†	0.01	0.17	0.32**	(0.60)***				
7	Sex[b]	0.03	0.04	0.12	0.18	–0.06	0.25*	(0.20)***			
8	Education[c]	–0.12	–0.27*	–0.22†	–0.01	–0.08	0.22†	0.11	(2.58)***		
9	Age	0.04	–0.07	0.00	–0.15	–0.06	–0.07	–0.15	–0.19†	(91.3)***	
10	Organizational tenure	0.02	0.04	0.00	–0.11	0.02	0.01	–0.19†	–0.26*	0.59***	(78.7)***

Notes: [a]PARTICIPATION = Employee participation in developing performance measures; QUALITY = Perceived measurement quality; ATTITUDE = Attitude toward performing well; NORM = Perceived norms for performing well; CONTROL = Perceived control over performing well; PERFORMANCE = Job performance.
[b]1 = male; 2 = female.
[c]1 = lower vocational education; 2 = intermediate general education; 3 = intermediate vocational education; 4 = higher general education; 5 = higher vocational education; 6 = scientific education.
†$p < .05$ (one-tailed); *$p < .05$ (two-tailed); **$p < .01$ (two-tailed); ***$p < .001$ (two-tailed).

TABLE IV **Standardized Regression Weights and Model Fit of Several Versions of the Structural Model**

	Independent Variable	Dependent Variable	Model 1 88 Pairs Excl. Control Variables	Model 2 88 Pairs Incl. Control Variables	Model 3 88 Pairs & 7 Items for *QUALITY*	Model 4 88 Pairs & 3 Items for *CONTROL*	Model 5 88 Pairs & Common Method Variable	Model 6 88 Pairs Path Model	Model 7 95 Employees and 88 Managers
Hypothesis 1	PARTICIPATION[a]	QUALITY	0.40**	0.41**	0.41**	0.41**	0.41**	0.40***	0.41***
Hypothesis 2a	QUALITY	ATTITUDE	0.16	0.16	0.16	0.17	0.16	0.13	0.18
Hypothesis 2b	QUALITY	NORM	0.32*	0.32**	0.32*	0.32**	0.32*	0.26**	0.30**
Hypothesis 2c	QUALITY	CONTROL	0.40**	0.40**	0.39**	0.30*	0.39**	0.32***	0.41***
Hypothesis 3a	ATTITUDE	PERFORMANCE	–0.05	–0.02	–0.02	–0.05	–0.02	–0.04	–0.01
Hypothesis 3b	NORM	PERFORMANCE	0.13	0.09	0.08	0.03	0.08	0.07	0.09
Hypothesis 3c	CONTROL	PERFORMANCE	0.30**	0.35***	0.34***	0.42**	0.34***	0.33***	0.36***
Control	Sex employee	PERFORMANCE		0.26**	0.25**	0.24**	0.25**	0.24**	0.25**
Control	Education employee	PERFORMANCE		0.23*	0.24*	0.23*	0.24*	0.23*	0.24*
Control	Age employee	PERFORMANCE		0.01	–0.03	–0.10	–0.03	–0.02	–0.03
Control	Org. tenure employee	PERFORMANCE		0.14	0.14	0.22*	0.14	0.11	0.13
Model fit indices									
χ^2			246.43	316.93	377.23	396.00	314.10	20.67	322.60
df			202	282	330	332	277	24	282
p			.02	.08	.04	.01	.06	.66	.05
CFI			0.96	0.97	0.96	0.95	0.97	1.00	0.97
TLI			0.96	0.96	0.96	0.94	0.96	1.11	0.96
RMSEA			0.05	0.04	0.04	0.05	0.04	0.00	0.04

Notes: [a]PARTICIPATION = Employee participation in developing performance measures; QUALITY = Perceived measurement quality; ATTITUDE = Attitude toward performing well; NORM = Perceived norms for performing well; CONTROL = Perceived control over performing well; PERFORMANCE = Job performance.
*$p < .05$ (one-tailed); **$p < .01$ (one-tailed); ***$p < .001$ (one-tailed).

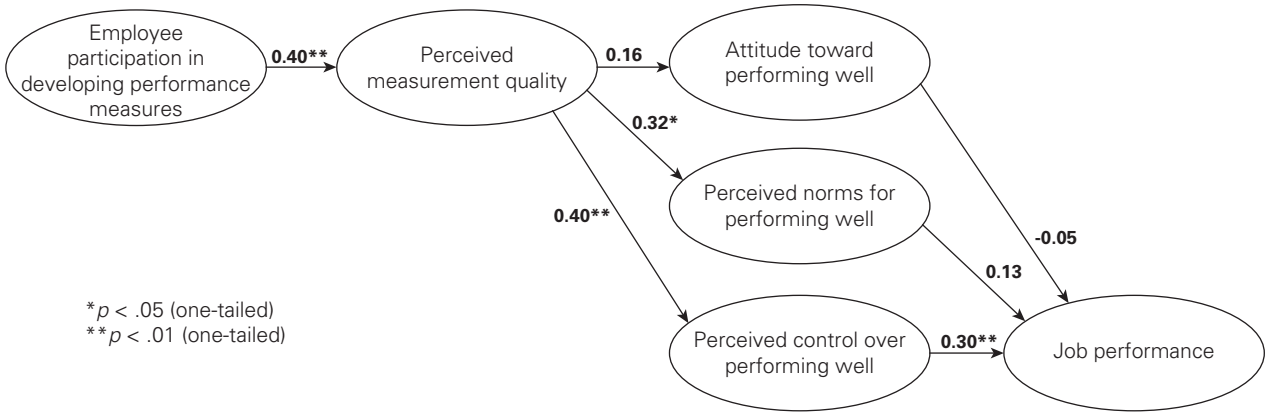


FIGURE 2. Standardized Path Coefficients for the Structural Model

item from each of the independent variables. The model fit was very good (χ^2 = 314.10, *df* = 277, *p* = .06; CFI = 0.97; TLI = 0.96; RMSEA = 0.04), and again we found comparable path coefficients (see Table IV, Model 5). In addition, in the measurement part of the model, the items did not load significantly on the latent common method variable, which also indicates that our results were unlikely to have been affected by common method variance.

Our sample size was quite small to conduct a structural equation analysis with so many estimation points. Therefore, we also checked if the results held if we analyzed a path model in which the constructs are measured with factor regression scores instead of item scores. The path model showed an excellent model fit (χ^2 = 4.46, *df* = 8, *p* = .81; Bollen-Stine *p* = .81; CFI = 1.00; TLI = 1.21; RMSEA = 0.00), and the same paths were as significant as in the structural model. The standardized path coefficients of the path model are shown in Table IV (Model 6).

Another way to deal with the relatively small sample was to include the responses of employees for whom we did not receive a manager's response. Because we were uncertain if these values were missing completely at random, we did not use them for our initial analyses. However, we did use them as a robustness check. Including these employees increases the sample size to 95. This analysis had 5 (items) times 7 (respondents) missing values, because the managers' answers were used in this study only to assess job performance. We used the AMOS full information maximum likelihood estimation to deal with the missing values, because this method has less stringent assumptions about the randomness of missing data and leads to less bias in the estimations than other methods (Enders & Bandalos, 2001). The results are similar to our initial findings (i.e., they both support the same hypotheses: 1, 2b, 2c, and 3c; see Table IV, Model 7; measurement model: χ^2 = 294.86, *df* = 258, *p* = .06; CFI = 0.97; TLI = 0.96; RMSEA = 0.04; structural model: χ^2 = 322.60, *df* = 282, *p* = .05; CFI = 0.97; TLI = 0.96; RMSEA = 0.04).

Discussion

With the expectation there would be a positive job-performance effect if employees co-develop the performance measures (see Groen et al., 2012a; Hunton & Gibson, 1999; Kleingeld et al., 2004), this study examined how such a positive effect may come about. As expected, *employee participation in developing performance measures* has a large and statistically significant positive effect on the perceived quality of the performance measures (Hypothesis 1). In turn, we expected *perceived measurement quality* to be related to employees' *attitude toward*, *perceived norms for,* and *perceived control over performing well* (Hypotheses 2a, 2b, and 2c), and find a considerable and statistically significant effect that supports the latter two hypotheses (2b and 2c). Moreover, the theory of planned behavior's key constructs *attitude toward, perceived norms for,* and *perceived control over performing well* (Fishbein & Ajzen, 2010) were hypothesized to be related to better *job performance* (Hypotheses 3a, 3b, and 3c), but support was found only for the influence of *perceived control over performing well* (Hypothesis 3c). The model explains a substantial amount of variance in *job performance*. Analyses of the indirect effects reveal *employee participation in developing performance measures* is indirectly related to *job performance* via *perceived measurement quality* and *perceived control over performing well*.

Implications for Scholars

The main goal of this research was to discover how co-developing performance measures may be linked to better job performance. Earlier research found a positive relationship between co-developing performance measures and job performance (e.g., Hunton & Gibson, 1999; Kleingeld et al., 2004). These studies had noted reasons to expect such a relationship, but did not expand on the underlying nature of these links empirically. They assumed that not only motivational, but also social and cognitive factors play a role. The current study empirically examined the mediating role of these three types of factors, and of *perceived measurement quality*. The concept of *perceived measurement quality* was drawn from the management accounting literature, where it is often termed "performance measurement properties." The present study demonstrates the importance of incorporating this construct in future HRM research, because all significant relations explored in this study are mediated by it. In other words, to positively influence employee behavior and job performance by co-developing performance measures, one has to ensure that the co-development leads to high-quality performance measures in the eyes of the employees. This is in line with the current trend in HRM, which recognizes that it is not the implementation of HRM practices by the HRM department or the line management that matters, but the employees' perceptions of the effects of these practices (Aryee et al., 2012; Brewster et al., 2013; Den Hartog et al., 2013). In other words, future HRM researchers are advised to consider blending *perceived measurement quality* into the array of job performance predictors.

A second contribution of this study involves testing the theory of planned behavior in the realm of employee job performance (Fishbein & Ajzen, 2010). According to this theory at least one of three possible factors antecedes any type of behavior (Ajzen, 2006). Despite our theorizing on all three antecedents, we find support for only one of them: *perceived control over performing well*. Thus, from a theory of planned behavior perspective, *perceived control over performing well* seems to be an important and sole determinant of job performance. Hence, it will be fruitful to focus future research involving job performance of work-floor employees more specifically on variables that are related to *perceived control over performing well*. Existing examples are self-efficacy (Ajzen, 2012; Fishbein & Ajzen, 2010; Yzer, 2012); understanding job priorities; development of effective task strategies (Kleingeld et al., 2004); or the ability and opportunity dimensions of the increasingly popular ability-motivation-opportunity model (Jiang, Lepak, Hu, & Baer, 2012).

Implications for Managers

Based on this study, we advise HRM professionals to initiate employee participation processes to co-develop their own performance measures. Such participation includes the influence of employees on, for example, what exactly is measured, how it is measured, and how often the measures are updated and by whom (Neely et al., 1997, 2002). Such participation processes do not only elevate job performance, they also channel cooperative human efforts to the specific desirable performance criteria of teams or organizations. Traditionally, these job and team performance measures of organizational work floors tend to be expressed in terms of financial figures that feed into the balanced scorecards of the overall organization. If HRM and line managers were to jointly design processes for work-floor employee participation in the development of performance measures, then they may fulfill a key part of the promise of strategic HRM, that is, high-quality work-floor performance measures that are closely connected to the unique strategic priorities of the teams and overall organization involved. Before starting such a participation process, HRM staff may want to utilize the survey measures of the appendix to establish a baseline for such efforts, particularly vis-à-vis the employees' sense of quality of the formal and informal performance measures already in place.[6] Such a survey could give insight into existing versus desired performance measures (Wouters & Sportel, 2005).

To positively influence employee behavior and job performance by co-developing performance measures, one has to ensure that the co-development leads to high-quality performance measures in the eyes of the employees.

The theory of planned behavior used in this study may be used more often in organizations. One purpose of this theory is to provide practitioners with insights into how to change a certain type of behavior (here, job performance of employees). The current study finds that regarding the general category of work-floor employees, only *perceived control over performing well* is relevant for elevating job performance. This finding shows that it is important for HRM and line managers to enable employees in their work, by facilitating them with the necessary resources and by taking away constraints that hinder them to do a good job (Fishbein & Ajzen, 2010, p. 21). The current study shows that high-quality performance

measures can help in that regard. Unique in the theory of planned behavior is the explicit stipulation that it depends on the situation whether all three types of antecedents are relevant for the particular type of behavior studied. Consistent with the idea of employee participation, organizations are advised to use the survey from the appendix to find out which of the antecedents are most important for a specific organizational or work context, so that change efforts can be directed at the most relevant factors.

Strengths, Limitations, and Suggestions for Future Research

The sample used in this study has several strengths. The fact that our survey was completed by both employees and their supervising managers reduces common method bias and ensures that we measured each variable with the relevant person. By using a broad sample of people from various jobs, organizations, and industries, there was enough variance to test the hypotheses. Furthermore, using such a broad sample provides insight into promising directions for future research. However, this sampling strategy also has a drawback: the sample size was smaller than if we had solely targeted employees. Although research has shown that this does not increase the chance of false positives, it does increase the chance of false negatives (Goodhue et al., 2012). This means we were only able to detect large effects. Moreover, a longitudinal design was not feasible, which made it impossible to test for causality. Yet prior action research has already demonstrated longitudinal job performance effects of *employee participation in developing performance measures* (Groen et al., 2012a; Kleingeld et al., 2004).

The present study examined the relative importance of the three core constructs of the theory of planned behavior. We wanted to study to what extent they explain variance in *job performance*, and how they could be influenced by *employee participation in developing performance measures* via *perceived measurement quality*. A limitation of the theory of planned behavior is that determining which of the three constructs is the most important for predicting a particular type of behavior depends on the particular context. Hence, our results may not be generalized to managerial jobs or to work settings in other national cultures. This should be addressed in future research.

Another variable of the theory of planned behavior not included in our study's model is employees' *intention* to perform well. Behavioral intention is supposed to be a mediator between *attitude*, *perceived norms,* and *perceived behavioral control*, on the one hand, and actual behavior, on the other hand. This construct is typically included because it is a good proxy for the effects of an intervention if the behavior itself is not (yet) measurable (Francis et al., 2004). In the present research, we were able to measure *job performance* directly; hence, behavioral intention was not included in the model.

In this study *employee participation in developing performance measures* encompasses both individual and group participation. If future research were to investigate group participation alone, a direct effect on *perceived control over performing well* is plausible. Discussions with peers help employees get a more precise idea of priorities and working strategies (Kleingeld et al., 2004), which is likely to heighten perceived control over performing well. This is one of the reasons why group participation seems to have more stable and positive effects than individual participation (Hunton & Gibson, 1999; Wegge, 2000). New research is needed to discover more about the social-cognitive effects of group discussions during the process of co-developing performance measures (see De Haas & Algera, 2002, for an initial exploration of this issue).

Conclusion

This study offers insights into how *employee participation in developing performance measures* is linked to better *job performance*. First, this study shows that *employee participation in developing performance measures* leads to higher-quality performance measures. Better-quality performance measures are found to give employees a feeling of control over their own performance, which in turn enables them to perform better. In other words, if management offers nonmanagerial employees ways to co-develop measures with which to credibly assess their job performance, these will be viewed as measures of high quality. This gives employees a heightened sense of performance control, which elevates their actual job performance.

Acknowledgments

The authors thank the survey participants as well as everyone who helped us find respondents, including the following organizations: EVO, NGI Platform for ICT-professionals, Noventum Service Management Consultants, TSM2Connect, and Vereniging Logistiek Management. For their constructive questions and comments on earlier versions of this article, we thank the editor, Charles Fay; the anonymous reviewers; the members of

Bianca Groen's doctoral committee; and workshop participants of the EAWOP 2011 conference, European Academy of Management conference 2012, University of Amsterdam, and Eindhoven University of Technology.

Notes

1. Approaching more than one employee per manager would increase the workload of the manager too much, as he or she would then have to complete a survey for every participating employee.
2. Deleted items: My performance expressed in the performance measures is strongly affected by changes in economic conditions; My performance expressed in the performance measures is strongly affected by decisions made in other parts of the organization; My performance expressed in the performance measures is strongly affected by changes in the behavior of parties outside the organization, such as customers or suppliers; My performance expressed in the performance measures is strongly affected by factors beyond my responsibility.
3. Deleted items: Working hard leads to better performance on the performance measures; Devotion and effort in the job leads to better performance on the performance measures.
4. Deleted items: Certain conditions make it impossible for me to always meet everything that is expected of me in my work; Certain factors make it difficult for me to always meet everything that is expected of me in my work.
5. To give insight into the correlations with the four control variables, Table III gives estimates of the model including the control variables. These estimates differ maximally 0.01 from the estimates of the model without control variables.
6. HRM practitioners who are interested in our benchmark scores are encouraged to contact the corresponding author.

BIANCA A. C. GROEN is assistant professor of management accounting at the University of Amsterdam Business School, The Netherlands. She obtained her PhD degree in organizational behavior and management accounting from the University of Twente, Enschede, The Netherlands. Her research focuses on behavioral effects of performance measurement, and to this end she uses both survey and qualitative research methods. She has bachelor's and master's degrees in industrial and organizational psychology (cum laude) and in industrial engineering and management. Dr. Groen has published in several international and Dutch journals in accounting and HR, such as *Management Accounting Research* and the *International Journal of Human Resource Management.*

CELESTE P. M. WILDEROM holds the chair in change management and organizational behavior at the University of Twente, Enschede, The Netherlands. In 1987, she obtained her PhD in psychology from the State University of New York, Buffalo in the United States and then worked in the economics and business administration faculties at both Tilburg University and the Free University in the Netherlands. She has been associate editor of various international management journals such as the *British Journal of Management, Academy of Management Executive/Perspectives,* and the *Journal of Service Management.* Her current research pivots on effective leadership and followership in various profit-making and nonprofit work settings (http://www.utwente.nl/bms/cmob/staff/wilderom).

MARC J. F. WOUTERS is professor of management accounting at Karlsruhe Institute of Technology in Germany, and visiting professor at the University of Amsterdam in the Netherlands. His research and teaching focuses on management accounting in operations and innovation, typically with colleagues from other disciplines and with case companies. He has published several dozen papers in a variety of academic journals, including *Harvard Business Review, MIT Sloan Management Review, Accounting, Organizations and Society, Contemporary Accounting Research, Journal of Operations Management,* and *Journal of Product Innovation Management*. Earlier, he was full professor at the University of Twente, and he worked at Eindhoven University of Technology, Ernst & Young Management Consultants, and Maastricht University, all in the Netherlands.

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APPENDIX Scale Items

Employee participation in developing performance measures (completed by the employee)

I have/had influence on…

1. … how the performance measures are designed.
2. … the choice of which data are used as input into the performance measures.
3. … ongoing modifications to the design of the performance measures.
4. … the implementation of the performance measures.
5. … the maintenance of the performance measures.

Perceived measurement quality (completed by the employee)

6. The performance measures measure only what I can actually influence.
7. The performance measures express accurately whether I function well or not.
8. If I perform well, it is directly reflected in the performance measures.
9. The performance measures are objective and verifiable.
10. Providing effort in my job leads to better performance on the performance measures.

Attitude toward performing well (completed by the employee)

11. I find it positive to always meet everything that is expected of me in my work.
12. It satisfies me to always meet everything that is expected of me in my work.
13. I find it important to always meet everything that is expected of me in my work.

Perceived norms for performing well (completed by the employee)

Please think of people in your work environment who are so important to you that their opinions or behavior affects you, while responding to the following statements.

14. They encourage me to always meet everything that is expected of me in my work.
15. They themselves do always meet everything that is expected of them in their work.
16. They themselves try to always meet everything that is expected of them in their work.

Perceived control over performing well (completed by the employee)

17. It is totally up to me whether I always meet everything that is expected of me in my work.

Job performance (completed by the manager)

18. He/she always performs all essential duties.
19. He/she always fulfills all responsibilities required by his/her job.
20. He/she always meets all formal performance requirements of the job.
21. He/she always completes all duties specified in his/her job description.
22. He/she never neglects aspects of the job that he/she is obligated to perform.