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# HIGH JOB PERFORMANCE THROUGH CO-DEVELOPING PERFORMANCE MEASURES WITH EMPLOYEES

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# HIGH JOB PERFORMANCE THROUGH CO-DEVELOPING PERFORMANCE MEASURES WITH EMPLOYEES

According to various studies, employee participation in the development of performance measures is supposed to increase job performance. For this purpose, it is important to know *how* this job performance elevation occurs. This is the focus of the present study. Based on the theory of planned behavior, we hypothesize that job performance is dependent upon employees' attitudes towards, perceived social norms for, and perceived control over performing well in their job. We hypothesize that when employees have co-developed performance measures, they perceive these performance measures to be of higher quality, which in turn elevates employees' attitudes towards, perceived social norms for, and perceived control over performing well in their job. Survey data from 95 employees and 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 the study's design, and sketch future research in this area.

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

## **Introduction**

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 employees at a lower level in the organization to have a voice in one or more areas of organizational performance (Glew, O'Leary-Kelly, Griffin, & Van Fleet, 1995, p. 402). 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 amount of studies about employee participation, few of them investigate *how* these beneficial participation–performance effects are achieved. To explain how HRM practices—such as employee participation—affect job performance and eventually organizational performance, researchers increasingly focus on employees’ perceptions of these practices (e.g., Alfes, Truss, Soane, Rees, & Gatenby, 2013; Kehoe & Wright, 2013; Nishii & Wright, 2008). Irrespective of the intentions of the HRM department or the line managers who implement HRM practices, these practices affect employee behavior and performance only if employees perceive HRM practices to be existent (Aryee, Walumbwa, Seidu, & Otaye, 2012; Brewster, Gollan, & Wright, 2013; Den Hartog, Boon, Verburg, & Croon, 2013). Given that dependence, this study focuses on the employee perceptions of participation and their relation to job performance.

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 include 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. This influence includes participation in 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).

Prior studies found positive effects of employee participation in the development of performance measures on the performance of employees and work units (Groen, Wouters, & Wilderom, 2012a; Hunton & Gibson, 1999; Kleingeld, Van Tuijl, & Algera, 2004). Most scholars attribute these results to employee behavior, but do not investigate 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 system, as well as the offered feedback and goals) explain the positive effects on job performance. Some studies about 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—in our study, co-developing performance measures and job performance. The same three 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; Gruman & Saks, 2011; Hall, 2008; Ilgen, Fisher & Taylor, 1979; Lockett & 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 through cognitive, motivational and social factors, as well as through perceived measurement quality. We define *job performance* as the extent to which employees meet their job requirements according to their manager (Podsakoff & Mackenzie, 1989). By blending together the literature on the employee participation practice, 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. This knowledge is 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 types of factors are the most important in the realm of job performance, and therefore foci for fruitful future research endeavors.

First, we introduce *perceived measurement quality* as a promising construct for explaining 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, since they will only be seen as valuable in providing direction if the performance measures correctly reflect employee performance (e.g., Abernethy, Bouwens, & Van Lent, 2004; Banker & Datar, 1989). In this paper we find that non-managerial employees' perception of the measurement quality is also crucial. This study aims to contribute to the recognition of the importance 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 yet been used to explain *job performance*, even though Fishbein and Ajzen (2010, p. 3) suggest this theory to be 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 construct, 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 linking these two constructs. Subsequently, the survey method is further explained, after which the structural equation modeling results are given. The paper closes with a discussion of its theoretical and practical implications, limitations and suggestions for future research.

## Hypotheses

Figure 1 depicts the hypothetical model and the definitions of the constructs. First, we hypothesize if employees have an influence on the design of performance measures, they will consider them to be of better quality than if they had no influence. Next, *perceived measurement quality* is hypothesized to be related to employees' *attitudes towards*, *perceived norms for*, and *perceived control over performing well* in their job. These three constructs, in turn, are hypothesized to be positively related to high *job performance*. Below we will elaborate on the theory and theorizing from which we derived these hypotheses.

(Insert Figure 1 about here)

*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). Employees possess valid, unique and relevant information and insights which are

important for the sound design of performance measures (Roberts, 2002). In the participative process of developing performance measures, employees can develop measures matching their own needs or wishes within the boundaries established by their managers. For example, they can define 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, these employees are not only more positive about these developed performance measures (Abernethy & Bouwens, 2005; Wilderom, Wouters, & Van Brussel, 2007; Wouters, 2009), but also find the measures' feedback more useful (Kleingeld et al., 2004). Similarly, for the more general construct "performance appraisal participation" meta-analyses have found that employees who participate in the performance appraisal process have more positive reactions towards the appraisals (Cawley et al., 1998; Pichler, 2012). Moreover, employees who see co-developed performance measures as a credible and powerful resource are more likely to accept their output (Cawley et al., 1998; Lockett & Eggleton, 1991).

Some employees may try to use the opportunity for participation to "game" the system, that is, "take actions that increase pay-outs [...] without improving actual performance" (Baker, 1992, p. 600). Yet, according to social exchange theory, few employees are likely to do so, because once 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 III, & Moser, 2009; Cropanzano & Mitchell, 2005; Fehr & Gächter, 2000). Furthermore, high-quality performance measures are also important for employees. Recall our 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 employees. Employees likely want measures to be sensitive to their actions—at least the ones that are looked upon favorably—

because this means their efforts will be recognized by their superiors. Moreover, employees want the measures to be precise, since this means the performance measures incorporate factors they can influence (Keeping & Levy, 2000). And finally, employees want performance measures to be verifiable: they want to rely on numbers that can be corroborated and checked to report actual results. 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.*

*Perceived measurement quality and attitude towards performing well*

*Attitude towards performing well* is defined here as the employee's evaluation regarding always meeting all job requirements (see Figure 1). We expect *perceived measurement quality* to be related to *attitude towards performing well* for several reasons. First of all, 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). Secondly, 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). Thirdly, 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 towards 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 towards performing well* (Burney et al., 2009).

*Hypothesis 2: Perceived measurement quality is positively related to attitude towards performing well.*

#### *Perceived norms for performing well*

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 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, 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. Thus, if the performance measures are of better quality, injunctive-behavioral expectations are more clearly communicated, and therefore employees will know better how they

are expected to meet their job requirements.

If the quality of 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.

Empirical research on the relationship between *perceived measurement quality* and *perceived norms for performing well* is scarce. In the reasoning behind Hypothesis 2 we explained how *perceived measurement quality* influences autonomous motivation. Research has shown, autonomous motivation also influences *perceived norms for performing well* (Hagger and Chatzisarantis, 2007, 2009). Furthermore, Siero *et al.* (1989) showed a positive effect of monitoring and feedback on the normative beliefs of mail-van drivers. Therefore, we hypothesize:

*Hypothesis 3: Perceived measurement quality is positively related to perceived norms for performing well.*

#### *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 (Melnik, 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 job, as well as the extent to which they can influence outcomes at work (Hall, 2008; Spreitzer, 1995, 1996). Consequently we hypothesize:

*Hypothesis 4: Perceived measurement quality is positively related to 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 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 mainly been applied to health behaviors such as smoking cessation or using condoms (Bartholomew, Parcel, Kok, & Gottlieb, 2001; Fishbein & Ajzen, 2010), but has also been used in HRM and organizational behavior literature (e.g., Dunn & Schweitzer, 2005; Gagné, 2009; Hill, Mann, & Wearing, 1996; Jimmieson, Peach, & White, 2008; Westaby, Probst, & Lee, 2010). While Fishbein and Ajzen have pointed to the relevance of the theory of planned behavior to *job performance*, as far as we know this kind of application of the theory has not been pursued. We expect all three key variables of this theory are related to *job performance*. Below we offer the specific rationales for each proposition.

According to Fishbein and Ajzen (2010, p. 17), *attitude towards 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 towards 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 (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 relationship between *attitude towards performing well* and *job performance*.

*Hypothesis 5: Attitude towards performing well is positively related to job performance.*

Although most theories and research in HRM and organizational behavior regard motivational and cognitive factors as 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 that in accordance with the theory of planned behavior, 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 motivational and cognitive factors. Furthermore, Merriman and Sen (2012) also emphasized the influence of social norms in organizational behavior, finding that managers’ normative beliefs influence their investment decisions and thus their performance.

When people do not act according to the norms of their organization or team, they risk

repercussions such as stigmatization or rejection by other organizational members (Muchinsky, 2003). Therefore, employees are more eager to perform well if the significant others do, try to or tell them to perform well.

*Hypothesis 6: Perceived norms for performing well is positively related to job performance.*

Besides *attitude towards* and *norms for performing well*, *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 impact 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 that is available or could be made 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* would mean 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 that dispiriting view on their own ability may actively search for opportunities to solve problems, for instance by making use of unusual or creative ways to improve performance. Based on this reasoning we hypothesize:

*Hypothesis 7: Perceived control over performing well is positively related to job performance.*

## Method

In order 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 employees and managers who met the following criteria: (1) they must have worked together in their current functions for at least one year; (2) the non-managerial employees had to have jobs in line positions at the lowest hierarchical level of an organization; (3) the manager had to use performance measures to assess the employee's actual performance. Since few organizations were found to have implemented performance measurement in 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 Heckathorn (2004) demonstrated that *independent* of one's starting point, snowball sampling leads to asymptotically unbiased samples which are just as good, and often even better than random sampling methods. Our starting point for finding respondents was our own network. Some of the contacted people/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 for completing our survey by publishing three articles in professional journals and by organizing two seminars about "developing useful performance measures." Before prospective respondents participated in the seminars, they filled out the survey.

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. *Employees*

who met the criteria were asked for the contact details of their managers; they then immediately received the link to the actual survey. *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 their employee, we contacted the manager (again) to complete the main survey via the internet.<sup>1</sup> All respondents were assured confidential treatment of their data. Later everyone who participated was sent the research report showing their personal scores, benchmarked to the average of all other participating pairs.

The initial short survey resulted in 21 employees and 74 managers who were willing to participate and met the inclusion criteria: potentially  $21 + 74 = 95$  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.

(Insert Table I about here)

#### *Survey instrument*

Following the guidelines of Podsakoff, MacKenzie, Lee and Podsakoff (2003) we reduced common method bias in several ways. First of all, 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 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 to understand the items better (Frantom, Green, & Lam, 2002). Our third effort to prevent 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). For the pretest we used Anderson and Gerbing's (1991) item-sort task and the Three-Step Test-Interview method (Hak, Van der Veer, & Jansen, 2008) which 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*, since it signifies the extent of the influence employees feel they have had on the design of the performance measures.

*Employee participation in developing performance measures* consisted of five items and had a Cronbach's alpha of .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 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 .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,<sup>2</sup> because theoretically they were the most remote from the definition of *perceived measurement quality* (see Appendix). 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. For the main analyses we deleted two of these three items with the smallest item loadings, seeking to avoid over-representation of this aspect of *perceived measurement quality*.<sup>3</sup> Also, a robustness check was performed by including all three “input items”, while their error terms were allowed to covary.

The items for *attitude towards*, *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 .87 for *attitude towards performing well*, .86 for *perceived norms for performing well* and .61 for *perceived control over performing well*. The Cronbach’s alphas of *attitude towards* 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 used only the positively formulated item to measure *perceived control over performing well* in our main analyses.<sup>4</sup> We also as a robustness check 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 which 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 .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 structural equation modeling, using maximum likelihood estimation of AMOS 18. Although variance based structural equation modeling (PLS) is often used for smaller sample sizes, recently a comprehensive series of Monte Carlo simulations showed that covariance based structural equation modeling is recommended over a series of regression analyses or PLS. It is claimed such an approach compensates for measurement error and is therefore more accurate than the other two approaches (Goodhue, Lewis, & Thompson, 2012).

Before 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 non-normality. However, multivariate kurtosis was high, so we used bootstrapping as a robustness check to ensure this did not influence our results (Kline, 2011, p. 177; Nevitt & Hancock, 2001).

Anderson and Gerbing's (1988) two-step modeling approach was utilized. This approach has several advantages compared to estimating the structural model alone. It is easier in cases of poor model fit 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 robustness of the found significant levels of the path coefficients, we used maximum likelihood bootstrapping with 1999 bootstrap samples. The percentile and bias-corrected confidence intervals were set to 95%.

To determine 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 CFI, TLI and RMSEA. CFI and TLI values are recommended to be higher than .95 and RMSEA should be lower than .06 (Hu & Bentler, 1999).

## Results

As a first step the measurement model was analyzed and the model fit was good ( $\chi^2 = 241.60$ ,  $df = 194$ ,  $p = .01$ ; Bollen-Stine  $p = .45$ ; CFI = 0.96; TLI = 0.95; RMSEA = .05). Table II shows the standardized estimated factor loadings, and Table III the correlations between the constructs.<sup>5</sup> Significant correlations 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 3), *perceived measurement quality* and *perceived control over performing well* (Hypothesis 4) and *perceived control over performing well* and *job performance* (Hypothesis 7).

(Insert Table II and Table III about here)

The model fit of the structural model was also good ( $\chi^2 = 246.43$ ,  $df = 202$ ,  $p = .02$ ; Bollen-Stine  $p = .48$ ; CFI = 0.96; TLI = 0.96; RMSEA = .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). The results support Hypotheses 1, 3, 4 and 7. The model explains 16 percent of the variance of *perceived measurement quality*, 3 percent of *attitude towards performing well*, 10 percent of *perceived norms for performing well*, 16 percent of *perceived control over performing well* and 12 percent 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 towards performing well* is not significant. The indirect effect via *perceived measurement quality* and *perceived norms for performing well* is only significant if the bias-

corrected percentile method is used (unstandardized  $B = .007$ ,  $SE = .007$ , 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  $B = .021$ ,  $SE = .012$ , one-tailed  $p < .01$ ).

(Insert Table IV and Figure 2 about here)

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 ( $\chi^2 = 296.32$ ,  $df = 258$ ,  $p = .05$ ; CFI = 0.97; TLI = 0.96; RMSEA = .04) and the structural model ( $\chi^2 = 316.93$ ,  $df = 282$ ,  $p = .08$ ; CFI = 0.97; TLI = 0.96; RMSEA = .04) fit well. Variances in age and education of the employee explain a significant amount of the variance in performance ( $R^2$  increases from .12 in the model without control variables to .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 towards, perceived norms for* and *perceived control over performing well*, and *job performance* respectively, and between *perceived measurement quality* and *job performance*. None of the direct effects were significant and the strengths of all others relations remained the same. This means probably 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 had only retained one item reflecting employee input, but now we included the two additional items and allowed the error terms of the three items to covary. This analysis revealed results similar 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 but 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 towards*, *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 be 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 item from each of the independent variables. The model fit was very good:  $\chi^2 = 314.10$ ,  $df = 277$ ,  $p = .06$ ; CFI = 0.97; TLI = 0.96; RMSEA = .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 as well indicates our results were unlikely to be affected by common method variance.

Our sample size was quite small for conducting a structural equation analysis with so many estimation points. Therefore, we also checked if the results hold 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 ( $\chi^2 = 4.46$ ,  $df = 8$ ,  $p = .81$ ; Bollen-Stine  $p = .81$ ; CFI = 1.00; TLI = 1.21; RMSEA = .00) and the same paths were 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 is to include the responses of employees for whom we did not receive a manager's response. Since 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, since the managers' answers were only used in this study to assess job performance. We used the full information maximum likelihood estimation of AMOS 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, 3, 4, and 7; see Table IV, Model 7; measurement model:  $\chi^2 = 294.86$ ,  $df = 258$ ,  $p = .06$ ; CFI = .97; TLI = .96; RMSEA = .04; structural model:  $\chi^2 = 322.60$ ,  $df = 282$ ,  $p = .05$ ; CFI=.97; TLI=.96; RMSEA = .04).

## Discussion and conclusion

With the expectation there would be a positive job-performance effect if employees co-developed 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 towards*, *perceived norms for* and *perceived control over performing well* (Hypotheses 2-4), and found a considerable and statistically significant effect on the latter two (Hypotheses 3 and 4). Moreover, the theory of planned behavior's key constructs *attitude towards*, *perceived norms for* and *perceived control over performing well* (Fishbein & Ajzen, 2010), were hypothesized to be related to better *job performance* (Hypotheses 5-7) while support was found for the influence of *perceived control over performing well* (Hypothesis 7). The model explained 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*

The main goal of this research was to discover how co-developing performance measures may link 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 sound reasons to expect such a relationship, but did not empirically expand on the underlying nature of these links. They assumed not only that 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, since all significant relations explored in this study are mediated by it. In other words, to positively influence employee behavior and 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 which 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, both future HRM practice and research are advised to more often use measures like the one employed here, tapping the perceived quality of an implemented practice that purports to elevate employee performance.

The significant relationship between *perceived control over performing well* and *job performance* shows the importance of facilitators such as role-clarity, skills and abilities, and the absence of environmental constraints to perform well on the job (Fishbein & Ajzen, 2010, p. 21). Hence, organizations that want to get the most out of their employees should strive to facilitate employees by providing them with the necessary resources, such as high-quality performance measures, and taking away constraints which hinder them to do their job well. The findings also suggest that future research about job performance should focus on variables that determine or at least are related to *perceived control over performing well*. 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).

Contrary to the hypotheses, *attitude towards* and *perceived norms for performing well* were not found to be related to *job performance* in this sample. This is in line with the theory of planned behavior's explicit qualification that only one or two of its three core constructs may turn out to be important (Ajzen, 2006). Moreover, motivational effects may be more important for managerial employees than for non-managerial employees (Huang, Iun, Liu, & Gong, 2010). This means that in a managerial sample, *attitude towards performing well* may turn out to be an important predictor of job performance. This should therefore be examined in future research. An explanation for not finding support for Hypothesis 6 is given by De Jong and Bijlsma-Frankema (2010): peer pressure is only likely to have an effect on performance if there is a high degree of norm consensus. Whether that was the case on the work floors of our sample remains unknown and should be addressed in future research.

*Strengths, limitations and suggestions for future research*

The sample of this study has several strengths. The fact that our survey is 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. Yet this sampling strategy also has a drawback: the sample size is smaller than if we had solely targeted employees. Although research has shown this does not increase the chance of false positives, it does however 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 effects of *employee participation in developing performance measures* on constructs that are similar to those of the current study (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 the variance in *job performance*, and how they could be influenced by *employee participation in developing performance measures* via *perceived measurement quality*. 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 mediate between *attitude*, *perceived norms* and *perceived behavioral control*, on the one hand, and actual behavior on the other hand. They are typically included because they are a good proxy for the effects of an intervention if the behavior itself is not (yet) measurable (Francis et al., 2004). Here *job performance* could be measured directly, hence behavioral intentions were not included in the model.

In this study *employee participation in developing performance measures* encompassed both individual and group participation. Individual participation is supposed to be related to *perceived control over performing well* via *perceived measurement quality*. However, group participation is probably also directly related to control. Discussions with peers help employees get a more precise idea of priorities and working strategies (Kleingeld et al., 2004), which is likely to heighten their sense of 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 find out 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).

To conclude, this study offers a better understanding of how *employee participation in developing performance measures* links to better *job performance*. It reveals that *employee participation in developing performance measures* leads to higher quality performance measures. Performance measures of better quality were found to give employees a feeling of control over their own performance, which in turn enabled them to perform better. In other words, if management offers non-managerial employees ways to co-develop measures with which to credibly assess their performance, these will be viewed as measures of high quality. This gives employees a heightened sense of performance control which elevates their actual performance. We advise HRM professionals to experiment carefully with processes that channel employee participation in terms of designing their own performance measures. Such participation processes do not only elevate performance, but also link the human to the strategic planning and financial resources of the organization. This is because traditionally job and team performance measures of organizational work floors tend to be expressed also in terms of financial figures that feed into the balanced scorecards of the entire organizations involved. In other words, if HRM and line-

managers were to jointly design processes for work-floor employee participation in the development of performance measures, then one part of the promise of strategic HRM might be fulfilled, i.e., high-quality work-floor performance measures which links well to the unique strategic priorities of any organization involved.

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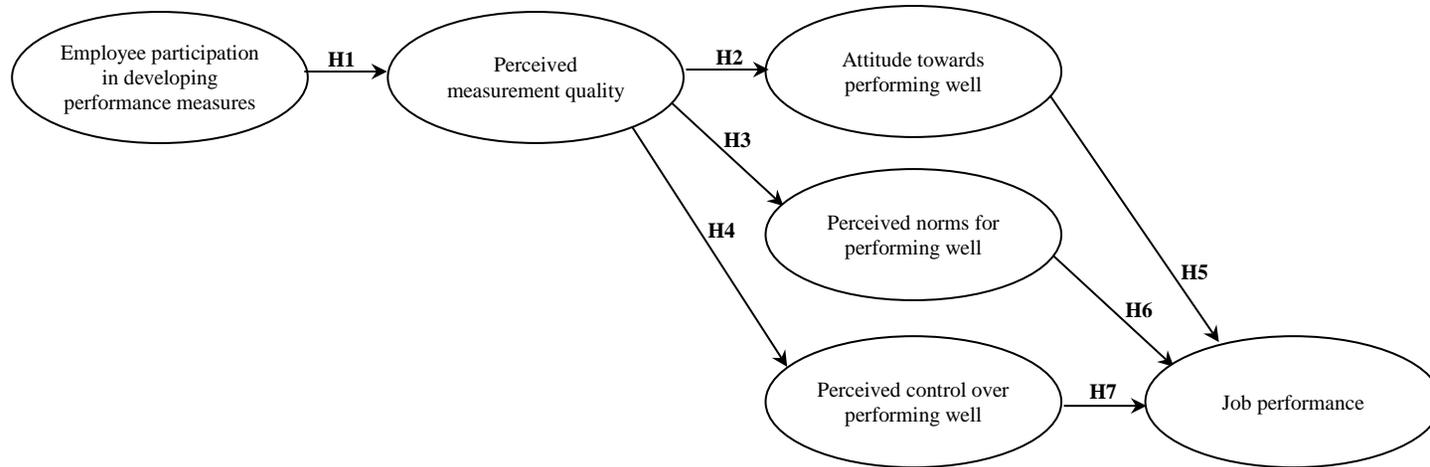
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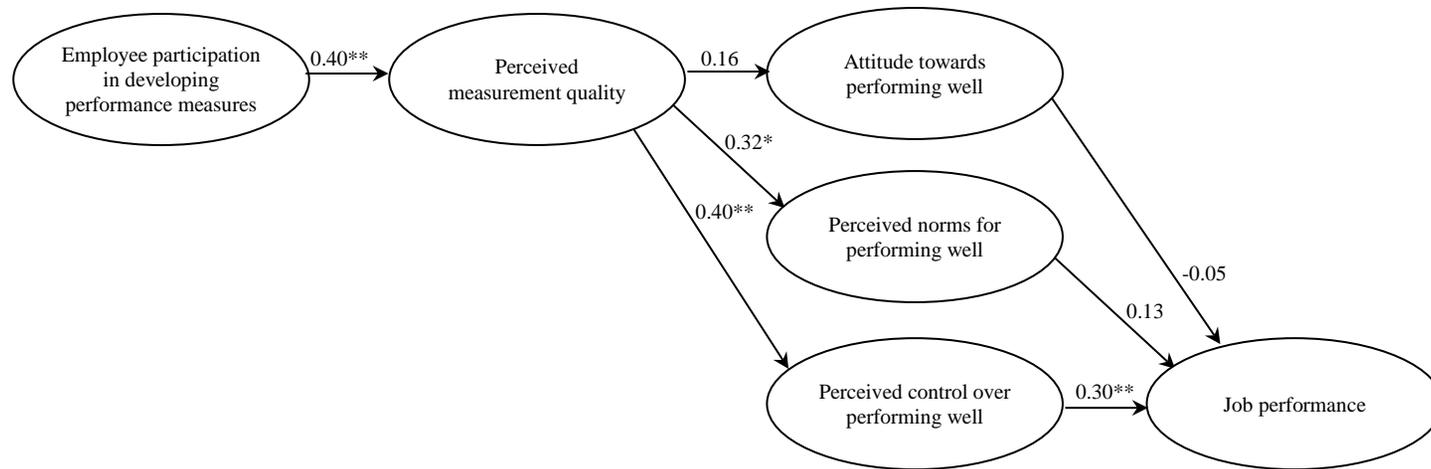
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Construct	Definition
Employee participation in developing performance measures	The extent of influence employees feel they have had on the design, implementation and maintenance of the performance measures they are measured by (cf. Abernethy & Bouwens, 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 towards performing well	The employee's evaluation regarding always meeting all job requirements (cf. 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 themselves always try to meet all job requirements (cf. Fishbein & Ajzen, 2010)
Perceived control over performing well	The extent to which employees believe to be capable of always meeting all job requirements (cf. 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



\* $p < .05$  (one-tailed)

\*\* $p < .01$  (one-tailed)

\*\*\* $p < .001$  (one-tailed)

**FIGURE 2.** Standardized Path Coefficients for the Structural Model

**TABLE I** Respondent Characteristics

Characteristic		All employees (N=95)	Employees with response of their manager (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)			5,582 (23,467)
	min / max			7 / 150,000

**TABLE II** Descriptive Statistics and Factor Loadings of the Measurement Model

Latent variables	$\alpha$	N	M	SD	Min	Max	Standardized factor loadings <sup>a</sup>	Unstandardized factor loadings <sup>a</sup>	
<b>PARTICIPATION<sup>b</sup></b>	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 <sup>c</sup>		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 <sup>c</sup>		88	3.45	1.74	1	7	0.83	0.82	***
<b>QUALITY<sup>b</sup></b>	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	***
<b>ATTITUDE<sup>b</sup></b>	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	***
<b>NORM<sup>b</sup></b>	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	***
<b>CONTROL<sup>b</sup></b>	NA								
Item 17		88	4.69	1.21	2	7	NA	NA	
<b>PERFORMANCE<sup>b</sup></b>	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	***

<sup>a</sup> Only the estimated factor loadings are shown in the tables. The loadings of the measures on all other constructs (than the one the measure is posited to indicate) are set to zero.

<sup>b</sup> PARTICIPATION = Employee participation in developing performance measures; QUALITY = Perceived measurement quality; ATTITUDE = Attitude towards performing well; NORM = Perceived norms for performing well; CONTROL = Perceived control over performing well; PERFORMANCE = Job performance

<sup>c</sup> The error terms of these two items were allowed to covary:  $r=.389^{**}$

\*\* $p < .01$  (two-tailed)

\*\*\* $p < .001$  (two-tailed)

**TABLE III** Construct Variances (In Parentheses on the Diagonal Axis) and Correlations

	1	2	3	4	5	6	7	8	9	10
1 PARTICIPATION <sup>a</sup>	(3.09) ***									
2 QUALITY <sup>a</sup>	0.42 **	(0.70) *								
3 ATTITUDE <sup>a</sup>	-0.01	0.16	(0.52) ***							
4 NORM <sup>a</sup>	0.13	0.31 *	0.24 †	(0.53) **						
5 CONTROL <sup>a</sup>	0.07	0.40 **	0.10	0.16	(1.44) ***					
6 PERFORMANCE <sup>a</sup>	0.02	0.23 †	0.01	0.17	0.32 **	(0.60) ***				
7 Sex <sup>b</sup>	0.03	0.04	0.12	0.18	-0.06	0.25 *	(0.20) ***			
8 Education <sup>c</sup>	-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) ***

<sup>a</sup> PARTICIPATION = Employee participation in developing performance measures; QUALITY = Perceived measurement quality; ATTITUDE = Attitude towards performing well; NORM = Perceived norms for performing well; CONTROL = Perceived control over performing well; PERFORMANCE = Job performance

<sup>b</sup> 1 = male; 2 = female

<sup>c</sup> 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 <i>QUAL.</i>	Model 4 88 pairs & 3 items for <i>CONT.</i>	Model 5 88 pairs & common method variable	Model 6 88 pairs path model	Model 7 95 employees and 88 managers
Hypothesis 1	PARTICIPATION → QUALITY	0.40 **	0.41 **	0.41 **	0.41 **	0.41 **	0.40 ***	0.41 ***
Hypothesis 2	QUALITY → ATTITUDE	0.16	0.16	0.16	0.17	0.16	0.13	0.18
Hypothesis 3	QUALITY → NORM	0.32 *	0.32 **	0.32 *	0.32 **	0.32 *	0.26 **	0.30 **
Hypothesis 4	QUALITY → CONTROL	0.40 **	0.40 **	0.39 **	0.30 *	0.39 **	0.32 ***	0.41 ***
Hypothesis 5	ATTITUDE → PERFORMANCE	-0.05	-0.02	-0.02	-0.05	-0.02	-0.04	-0.01
Hypothesis 6	NORM → PERFORMANCE	0.13	0.09	0.08	0.03	0.08	0.07	0.09
Hypothesis 7	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
<i>Model fit indices</i>								
	$\chi^2$	246.43	316.93	377.23	396.00	314.10	20.67	322.60
	<i>df</i>	202	282	330	332	277	24	282
	<i>p</i>	0.02	0.08	0.04	0.01	0.06	0.66	0.05
	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

<sup>a</sup> PARTICIPATION = Employee participation in developing performance measures; QUALITY = Perceived measurement quality; ATTITUDE = Attitude towards 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)

## Endnotes

1. Approaching more than one employee per manager would increase the workload of the manager too much as they 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 .01 from the estimates of the model without control variables.

## 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 towards 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)*

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