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Typical Performance, Maximal Performance, and Performance Variability: Expanding Our Understanding of How Organizations Value Performance

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Existing research has distinguished between typical and maximal performance. Performance variability is another potentially important aspect of performance that has been infrequently studied. Using longitudinal data from the National Basketball Association ($N = 269$), we address this gap by examining how these three conceptualizations of performance are related to how organizations compensate their employees. Results indicate that each of these performance aspects is bivariately related to compensation levels, accounting for between 32% and 58% of the variance in compensation. In addition, typical performance and performance variability incrementally predicts compensation levels, although maximal performance does not. Implications for research and practice are discussed.

Performance description and prediction plays an important role in all personnel decisions (Landy & Farr, 1980), including decisions about how valuable employees are and how they should be compensated. However, despite the importance of deciding the value of employees for compensation purposes, there has been relatively little research on how managers make decisions about the value of their employees and how to allocate pay (Zhou & Martocchio, 2001).

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Managers do consider performance when deciding how to value employees (Zhou & Martocchio, 2001), with the dominant conceptualization being typical performance (Rushton, Jackson, & Paunonen, 1981). Yet research shows that typical performance is but one aspect of performance (Sackett, Zedeck, & Fogli, 1988). This research has also identified the construct of maximal performance, defined as what an individual "can do," whereas typical performance is defined as what an individual "will do" (Dubois, Sackett, Zedeck, & Fogli, 1993).

Although distinguishing maximal from typical performance has helped to further our understanding of the construct of performance, both ignore the extent to which variability in performance over time may influence how organizations value performance. Such an omission is unfortunate, given that research has shown some individuals are more variable in their performance than others (Rabbitt, Osman, Moore, & Stollery, 2001). Many authors have argued that performance fluctuation ought not to be considered as random noise but analyzed in and of itself (Lecerf, Ghisletta, & Jouffray, 2004). Indeed, some suggest that intraindividual variability in performance is a fundamental aspect characterizing individuals (Lecerf et al., 2004). The importance of intraindividual differences in variability has led researchers to propose that the *pattern* of performance exhibited by a worker is important to consider (DeNisi & Stevens, 1981).

Management researchers have begun investigating such distributional heterogeneity in performance over time (e.g., Hofmann, Jacobs, & Baratta, 1993). However, such studies have focused almost exclusively on changes in mean levels of performance. As Slifkin and Newell (1998) argued, change in mean performance is a separate construct from variability around the mean. Over the past 50 years, deviations from mean performance have generally been interpreted as task-irrelevant errors, random events, or noise (Slifkin & Newell, 1998). Researchers in other fields, however, have found deviations from the mean to contain valuable information that can be used for prediction purposes (N. A. Fox & Porges, 1985). Furthermore, studies of intraindividual variability have examined performance over preaggregated periods, comparing weeks, semesters, or years. Aggregating data in this fashion, across occasions, result in much higher stability and consistency estimates than those based on disaggregated estimates (Diener & Larsen, 1984). Such aggregation will easily mask episodic variation in performance. Research conducted to date examining intraindividual performance distributions has not yet investigated episode-level performance distributions. Studying performance variability at the episode-level will avoid the masking effects just mentioned.

Thus, an examination of the literature reveals a gap in our knowledge of how organizations consider different conceptualizations of performance when valuing and compensating employees. We seek to address this gap by examining how maximal performance, typical performance, and performance variability influence the value organizations place on their employees. To do this, we examine the relationships among these different aspects of performance and individual compensation

levels. Because compensation has such an important influence on recruitment, motivation, and retention (Shaw, Delery, & Jenkins, 1998), understanding the linkage between different aspects of performance and compensation is important both practically and theoretically.

PERFORMANCE AND COMPENSATION

Research examining performance and compensation reveals that these constructs have a well-established relationship, as summarized in a recent meta-analysis by Jenkins, Mitra, Gupta, and Shaw (1998). Research by Pritchard, Jones, Roth, Stuebing, and Ekeberg (1988) also shows a positive relationship between incentives and performance at the group level of analysis.

There are three primary theoretical frameworks that address the performance and compensation relationship: expectancy theory, goal-setting theory, and reinforcement theory. Two of these theories—expectancy theory and goal-setting theory—focus on how financial incentives can be used to improve performance. Expectancy theory suggests that tying financial incentives to performance increases extrinsic motivation to expend effort, with the result of enhanced performance (Vroom, 1964). Shaw, Duffy, Mitra, Lockhart, and Bowler (2003) provided empirical support for this proposition in their field study of hospital employees. They found that merit pay raises positively influenced employee reactions, including pay level satisfaction, positive affect, and intentions to work hard.

Similarly, goal-setting theory suggests that financial incentives increase acceptance of difficult performance goals, thereby enhancing performance (Locke, Latham, & Erez, 1988). For example, Locke, Bryan, and Kendall (1968) conducted a series of studies testing a proposed model of goals as a mediator of the influence of incentives on performance. They found that incentives led to higher levels of performance, but this effect became nonsignificant when they controlled for goals.

Reinforcement theory argues that basing compensation on performance will reinforce performance (Komaki, Coombs, & Schepman, 1996). When individuals display high levels of performance, rewarding them with high levels of compensation will increase the likelihood that the individual will perform at high levels in the future. Supporting this, Podsakoff, Bommer, Podsakoff, and MacKenzie (2006) conducted a meta-analysis which found that greater levels of performance resulted in greater levels of contingent reward.

PERFORMANCE AND PERFORMANCE DISTRIBUTIONS

Before examining the influence of performance on compensation, it is important to define performance. Motowidlo, Borman, and Schmit (1997) defined *performance*

as "the aggregated value to the organization of the discrete behavioral episodes that an individual performs over a standard interval of time" (p. 72). Within the broad domain of performance, Borman and Motowidlo (1993) defined the more specific construct of task performance as

> the proficiency with which job incumbents perform activities that are formally recognized as part of their jobs, activities that contribute to the organization's technical core either directly by implementing a part of its technological process, or indirectly by providing it with needed materials or services. (p. 73)

Furthermore, as noted by Jenkins et al. (1998), task performance can be distinguished in terms of its quantity and quality. The research presented here focuses on the quantity of task performance as it occurs in discrete behavioral episodes over time.

According to Dubois et al. (1993), typical performance refers to what an individual "will do." More specifically, Sackett et al. (1988) noted that typical performance is revealed when performance is examined over an extended period. One difference between our conceptualizations of performance and that of Sackett et al. is that they focused on performance situations. As noted by Dubois et al., in maximum performance situations, individuals are monitored over a brief period in which they contribute maximum effort, whereas in typical performance situations, individuals perform over a longer period and have more discretion over how much effort they contribute.

In contrast to performance situations, we focus on discrete performance episodes, following Motowidlo et al.'s (1997) definition of performance. The distinction between performance situations and performance episodes is important, because the scope of a performance situation can vary greatly, including as little as a fraction of one performance episode (e.g., the first step in assembling a complex piece of equipment) or as much as multiple performance episodes (e.g., setting up and cycling through several machine processes). Thus, performance episodes are more discrete in nature than performance situations.

Kane (1986) suggested that performance may be represented in a quantifiable manner by a performance distribution. A performance distribution comprehensively portrays the record of outcomes achieved in the course of executing an iterated job function during a specified period. The rate at which a performer achieved a specified outcome level is the percentage of all the times he or she carried out the particular job function on which he or she achieved the specified outcome level. This view of a performance distribution broadens the construct of performance and opens it to multiple means of conceptualization.

When examining performance distributions, three methods of conceptualizing performance are of interest. Two are from Sackett et al. (1988), in their seminal

work on maximal and typical performance. As mentioned earlier, the construct of maximal performance is defined as what an individual "can do," whereas typical performance is defined as what an individual "will do" (Dubois et al., 1993). A third method of conceptualizing performance is provided by Kane (1986). Kane suggested that variability of performance is similarly important and that variation around the mean of a performance distribution is distributed idiosyncratically rather than normally. He suggested that researchers should examine this variability in the distribution of performance as an important variable in management research. Following these precedents, we examine typical performance, maximal performance, and performance variability and how each of these conceptualizations of performance should influence the way organizations value and compensate employees.

Accordingly, we define *typical performance episodes* to be the average level of performance across a given number of performance episodes. We define *maximal performance episodes* to be the highest performance episode across a given number of performance episodes. Finally, we define *performance variability* as variance in performance across a given number of performance episodes. Although these conceptualizations of typical and maximal performance episodes bear some resemblance to the conceptualization of Sackett et al. (1988), they are new in their focus on the episode level rather than the performance situation. Performance situations are an important topic in management and applied psychology; however, they do not take into account differences between performance episodes. Our conceptualization of performance variability is similar to that of Lecerf et al. (2004) in their focus on episode-level variability.

Typical Performance

According to Feldman (1981), there are four primary cognitive tasks in evaluating employees: (a) recognizing and attending to relevant information about employees, (b) organizing and storing information for later access, (c) recalling information in an organized fashion, and (d) integrating information into a summary judgment. The fourth step requires managers to aggregate their knowledge of each employee's performance into one assessment. As Rushton et al. (1981) noted, the dominant conceptualization of performance is average or typical performance. This suggests that organizational decision makers consider typical performance when valuing employees. Indeed, Zhou and Martocchio (2001) found that the variable predicting the most variance in pay and reward allocation is typical performance. Accordingly, we hypothesize that typical performance will positively influence compensation levels.

H1: Typical performance will be positively related to compensation levels.

Maximal Performance

As previously noted, we define maximal performance episodes to be the highest performance episode across a given number of performance episodes. In this section, we examine how maximal performance episodes influence how organizations value and compensate employees. As mentioned previously, an additional important step in performance evaluation is recalling information in an organized fashion (Feldman, 1981). Considering the large number of performance events for each employee, this process is a demanding task.

Managers in organizations have finite cognitive-processing capacity (Cyert & March, 1963; March & Simon, 1958). When demands for cognitive processing are greater than their capacity, managers are likely to use simplifying heuristics (Kahneman & Tversky, 1974). These heuristics lower cognitive demands and make the judgment process more manageable. However, these heuristics can lead to systematic biases (Tversky & Kahneman, 1973), such as disproportionately weighting certain pieces of information. Indeed, researchers have previously noted that managers have systematic bias in their recall (Landy & Farr, 1980).

According to Tversky and Kahneman's (1973, 1974) theoretical work on heuristics in subjective probability, the process of recall is subject to the availability heuristic. People estimate frequency or probability by the ease to which instances can be brought to mind. In general, this works well, because more frequent events are easier to recall than infrequent ones. However, availability is influenced by other factors that are unrelated to actual frequency (Tversky & Kahneman, 1973). According to the availability heuristic, salience of an event positively influences the likelihood of its recall (Tversky & Kahneman, 1974). We suggest that instances of maximal performance will be more salient and thus more easily recalled.

In addition, by their very nature, maximal performance episodes will be valuable to organizations. Such episodes provide larger contributions to the success of the organization than do more typical episodes. The organization benefits not only from the relatively larger contribution but also from positive visibility to the organization if people outside of the organization witness such episodes. Furthermore, we would expect maximal performance episodes to demand especially large amounts of effort from employees, particularly when compared to typical performance. Equity theory (Adams, 1965) suggests that employees who engage in relatively greater levels of effort would expect greater levels of compensation. Therefore, we would expect organizations to provide greater levels of compensation to such employees. The importance of maximum performance should be reflected in how people in organizations value and compensate their employees.

H2: Maximal performance will be positively related to compensation levels.

Performance Variability

The Sackett et al. (1988) conceptualization of performance only considers typical and maximal performance. However, intraindividual variability indexes have been shown effectively to supplement more traditional kinds of information regarding stable aspects of a person's behavior (Nesselroade & Ghilsetta, 2000). In other fields of research, typical performance and performance variability have shown to be separate sources of variance in dependent variables (N. A. Fox & Porges, 1985). Indeed, Nesselroade and Ghilsetta argued that intraindividual variability is as much or more a part of the characterization of the individual as are the relatively fixed scores emphasized in classical test theory. Accordingly, in this section, we examine the influence of performance variability, defined previously as variance in performance across a given number of performance episodes, on compensation.

Performance variability can be very disruptive to organizations. Research in organizations suggests that success is not only a function of team members' talents and available resources but also the processes team members use to interact with each other to accomplish the work (Marks, Mathieu, & Zaccaro, 2001). One such process that is important to team performance and viability is planning (Ilgen, Hollenbeck, Johnson, & Jundt, 2005). Empirical data suggest that planning enhances performance at both the team (Stout, Cannon-Bowers, Salas, & Milanovich, 1999) and organizational level (Marks et al., 2001). However, performance variability can prohibit planning processes prior to implementation by increasing uncertainty of future events. In addition, performance variability can negate plans that are in the process of implementation by disrupting event sequences. Indeed, Hinds, Carley, Krackhardt, and Wholey (2000) found that people strive for predictability when choosing future work group members.

According to S. A. Fox and Bizman (1995), one likely response to the perception of inconsistent performance is for people to label the ratee as "unreliable" or "lacking stability." Instability is viewed as an intrinsically pejorative trait; therefore, personifications of inconsistency are liable to yield negative global evaluations. Individuals with a highly variable profile are perceived as less stable, and, consequently, this reduced stability is associated with a perception of lower desirability (S. A. Fox & Bizman, 1995). An investigation by DeNisi and Stevens (1981) highlighted the undesirability of performance variability. In their study, participants rated the performance of fictional salespeople, each of whom had identical performance means. Participants gave lower ratings to those with higher variability. A similar investigation by Scott and Hamner (1975) revealed that participants rated individuals high in performance variability to be lower in motivation, and an additional study by Steiner, Rain, and Smalley (1993) found that raters gave lower ratings to individuals with higher performance variability.

H3: Performance variability will be negatively related to compensation levels.

Conceptually, these measures of performance are separate from one another. An individual may have high ability (high maximal performance) but low motivation (resulting in low typical performance) and low reliability (high performance variability). Furthermore, these different types of performance should influence different types of attributions that managers make about employees. As noted by DeNisi and Stevens (1981), evaluations of typical performance take into account attributions of motivation. However, maximal performance should play a larger role in attributions of ability than of motivation (Sackett et al., 1988). Finally, performance variability should play a role in attributions of reliability (S. A. Fox & Bizman, 1995). This body of research suggests that each conceptualization of performance should predict an independent portion of the variance in how organizations value and compensate their employees.

H4: Typical performance, maximal performance, and performance variability will each independently predict compensation levels.

METHOD

Setting

We chose the National Basketball Association as the setting for our investigation. Basketball is a sport in which a team of 12 players competes against another team. At any given time, only 5 members are actively participating in the competition, though other team members may be substituted in at any time. Each team competes in 82 games during the season (the unit of time analyzed in this study). Each team has the opportunity to attempt to both score points (i.e., accumulate points for their team by having a player put a ball through a hoop) and prevent the other team from scoring points. The team that has scored more points at the end of the game is the winner. This setting was selected because both performance and salary data are publicly available and objectively measured. In addition, a basketball team can be thought of as an action team, in part because such teams have high differentiation and brief performance episodes that are repeated frequently (see Sundstrom, De Meuse, & Futrell, 1990).

Sample

The performance data used in this study were drawn from an archival database for the National Basketball Association. Performance data included individual performance in each game played from the 2000–2001 season through the 2003–2004 season. Our data included regular season games only. Exhibition games were not included. Salary data included contracts signed in the off-seasons following the

same years (NBA Basketball Statistics, 2005). Each contract signed during this time span was matched with the performance data in the year immediately prior to the new contract. Thus in this data set, performance temporally preceded compensation. There were 339 such contracts; however, some players signed more than one contract during this period. To maintain independence in the data, we utilized only the most recent contract for each player. Our final sample included 269 contracts, each signed by a different player.

Measures

In this data we operationalized typical performance as mean performance (points scored) over the course of the season, which follows the dominant precedent in the performance literature (Rushton et al., 1981). Research on maximal performance (Sackett et al., 1988) suggests that maximal performance should reflect the highest level of performance that an individual can achieve. Consequently, we operationalized maximal performance as the statistical maximum of each player's performance distribution (i.e., their highest scoring game that year).

Researchers have found that the standard deviation of performance and the mean of performance are often highly correlated (Hale, Myerson, Smith, & Poon, 1988). This could potentially result in biased results when the standard deviation is utilized as the operationalization of performance variability (Lecerf et al., 2004). One solution to this problem is to use the Intraindividual Coefficient of Variation (ICV), defined as the ratio of the standard deviation to the mean (Lecerf et al., 2004). This process has the advantage of comparing the standard deviation of each player's performance distribution on the scale of their own performance. Accordingly, we operationalized performance variability as the ICV of points scored for each player in each year.

The dependent variable in our study was the value organizations place on individuals. We operationalized this as the dollar amount of labor contracts signed by the players and organizations. Each player signs a contract to work for an organization, with both the salary and number of years of employment explicitly specified in the contract. We also included the control variables of year, age, and number of years in the league.

RESULTS

Table 1 shows the means, standard deviations, and correlations of the study variables. We examined these data and tested our hypotheses using hierarchical regression analyses (see Table 2). For Hypotheses 1, 2, and 3, each type of performance (typical performance, maximal performance, and performance variability) was entered as sole predictors after the control variables. For Hypotheses 4, all three types

TABLE 1
Correlations and Descriptive Statistics

	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1. Year	2002.86	1.105	—						
2. Age at contract	28.45	4.310	–.18**	—					
3. Years in league	6.09	3.870	–.17**	.91**	—				
4. Typical performance	9.0625	6.056	–.14*	–.11	.05	—			
5. Maximal performance	22.74	10.148	–.12	–.09	.04	.90**	—		
6. Performance variability	5.053	1.735	.11	.02	–.11	–.79**	–.67**	—	
7. Minimal performance	0.71	1.731	0	–.09	.03	.64**	.49**	–.45**	—
8. Compensation	21,742,048	28,737,459	–.06	–.26**	–.12*	.79**	.69**	–.57**	.59**

Note. N = 269.
*$p < .05$. **$p < .01$.

TABLE 2
Effects of Types of Performance on Compensation

	Beta	
Independent Variable	*Step 1*	*Step 2*
Hypothesis 1		
Year	–.103	.013
Age at contract	–.889**	–.210*
Years in league	.670**	.034
Typical performance		.771**
R^2 at each step	.161	.662
ΔR^2	.161	.501
F	16.904**	129.048**
Hypothesis 2		
Year	–.103	–.018
Age at contract	–.889**	–.435**
Years in league	.670**	.249*
Maximal performance		.643**
R^2 at each step	.161	.531
ΔR^2	.161	.37
F	16.904**	74.825**
Hypothesis 3		
Year	–.103	–.049
Age at contract	–.889**	–.550**
Years in league	.670**	.306**
Performance variability		–.521**
R^2 at each step	.161	.412
ΔR^2	.161	.251
F	16.904**	45.883**
Hypothesis 4		
Year	–.103	.011
Age at contract	–.889**	–.215*
Years in league	.670**	.024
Typical performance		.851**
Maximal performance		.151
Performance variability		–.266**
R^2 at each step	.161	.674
ΔR^2	.161	.513
F	16.904**	90.281**

*$p < .05$. **$p < .01$.

of performance were entered in the second step (see Table 2). This process allowed us to investigate the incremental variance explained by each type of performance while controlling for the other types.

Hypothesis 1 suggested that typical performance would be positively related to compensation. After the control variables were entered, typical performance had a beta weight of .771 ($p < .01$) and accounted for 50% of the variance in compensation, strongly supporting Hypothesis 1. Hypothesis 2 suggested that maximal performance would be positively related to compensation. After the control variables were entered, performance variability had a beta weight of .643 ($p < .01$) and accounted for 37% of the variance in compensation, providing strong support for Hypothesis 2. Hypothesis 3 suggested that performance variability would be negatively related to compensation. After the control variables were entered, performance variability had a beta weight of –.521 ($p < .01$) and accounted for 25% of the variance in compensation, strongly supporting Hypothesis 3.

Hypothesis 4 suggested maximal performance, performance variability, and typical performance would each be independently related to compensation. Accordingly, we conducted a hierarchical regression analysis with the control variables entered in Step 1 and the three different types of performance in Step 2. It is important to note the recommendation by Lecerf et al. (2004) to utilize the ICV instead of the standard deviation as the operationalization of performance variability is not appropriate in this situation. Including the impact of mean performance through its inclusion as the denominator in the ICV is not necessary because the effect of mean performance is already accounted for by its entry as a predictor. Thus, when testing Hypothesis 4, the standard deviation of performance was used as the operationalization of performance variability rather than the ICV.

When entered in Step 2, the beta for typical performance was .851 ($p < .01$), the beta for maximum performance was .151 ($p = .234$), and the beta for performance variability was –.266 ($p < .01$). These results indicate that typical performance and performance variability accounted for independent portions of the variance in compensation, though maximal performance did not. Thus, Hypothesis 4 was partially supported.

DISCUSSION

As predicted, when entered as the only predictors of compensation level, typical performance and maximal performance were each positively related to compensation and performance variability was negatively related to compensation level. In addition, when considered jointly, typical performance and performance variability each accounted for independent portions of the variance in compensation, though maximal performance did not. These findings suggest that it is useful to consider performance variability, in addition to typical and maximal performance.

When organizational decision makers decide how to value their employees, typical performance and performance variability each play independent roles.

This study examined the well-established constructs of typical and maximal performance, applying them in a new fashion (by focusing on discrete performance episodes) to their relationship with compensation decisions. In addition, we extend the literature on performance by focusing on performance variability and showing how performance variability and compensation decisions are related. This suggests that future research should consider how these three aspects of performance contribute to how managers value performance. Similarly, future research should examine moderators that might determine the relative impact of each of the types of performance on compensation.

This study has several strengths that aid the interpretation of the data. First, the data set is longitudinal, examining performance over the course of a year. Second, the predictor variables (typical performance, maximal performance, and performance variability) are temporally antecedent to compensation decisions, an important element in establishing causal direction. Third, this data set was drawn from objective archival data of organizations with valued outcomes at stake. Finally, performance was measured at the episode level, avoiding any variability masking effects that would have occurred if data were preaggregated into weeks or months and then examined for variability.

There are two potential limitations of this study. The first limitation is the generalizability of the findings from this sample to other contexts. Some might question whether inferences made from sports teams will generalize to other organizations. However, employees in this context have at least four similarities to employees in other contexts. First, they work in a hierarchical organization in which their performance is monitored and directed by a primary supervisor. Second, they are highly motivated to perform and can earn higher pay for doing so. Third, they are goal directed, have clear standards for performance, and receive feedback based on their performance. Finally, they operate in a competitive environment in which a primary goal of their organization is to maximize profit. For these reasons, we feel that the current sample can provide important insights that are relevant for other settings.

The second limitation, as noted in the Results section, is that there were strong relationships between each of the types of performance. When these variables are entered into the same regression analyses, these strong interrelationships make it more difficult to predict unique variance in compensation. Despite this effect, we still found support for most of our hypotheses. Thus, we found that even though these three constructs overlap, there is still enough difference between them for typical performance and performance variability to predict unique variance in compensation.

Although we did not investigate the factors that lead to a given level of performance (our focus was on the link between performance and compensation), it is clear

that there are numerous influences on an individual's level of performance. These influences include such traditional individual differences as ability and motivation as well as contextual factors such as opportunities to perform, performance of coworkers, and resource availability. Future research should examine antecedents for each type of performance. Typical performance, maximal performance, and performance variability may be differentially impacted by these antecedents.

Our findings have some important practical implications as well. Previous conceptions of performance were somewhat incomplete and should be modified to include performance variability. When making compensation decisions, managers need to understand what variables influence the decision-making process. Furthermore, depending on their environment, some organizations may need to focus on different conceptualizations of performance than others. Finally, compensation policies are likely to shape employee behaviors and performance. Organizations that reward maximal performance may encourage their employees to engage in higher risk behaviors, whereas organizations that reward low variability in performance are likely to inhibit risk taking. Organizations should closely examine their policies and patterns to make sure they are rewarding the types of performance that they want from their employees.

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