

## **Implicit human resource management theory: a potential threat to the internal validity of human resource practice measures**

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Since the publication of Huselid's (1995) paper examining the relationship between HR practices and firm performance, there has been an explosion of published papers examining the empirical relationship between HR practices and various measures of firm performance. This study examines the possibility that informants typically providing data about organizational HR practices may be biased by an implicit theory of human resource management. Our findings suggest the responses from subjects typically providing data about HR practices may be biased in their reporting by the performance of the organization. The generalizability of these results is considered and implications for future studies of the HR-firm performance relationship reviewed.

**Keywords:** construct validity; mental models; research methods; strategic human resource management

Recent research in the field of Strategic Human Resource Management (SHRM) has explored the substance and impact of organizational human resource strategies. This research has examined both the impact of individual HR practices on firm outcomes, such as compensation (Gerhart and Milkovich 1990) and employee selection (Terpstra and Rozell 1993), and the effect of sets of human resource practices on firm performance (Huselid 1995; MacDuffie 1995; Delery and Doty 1996; Ichniowski, Shaw and Prennushi 1997; Ngo, Turban, Lau and Lui 1998; Shaw, Delery, Jenkins and Gupta 1998; Hoque 1999; Guthrie 2001; Paul and Anantharaman 2003). This stream of research has documented statistically and practically significant relationships between various measures of human resource practices and business unit and/or firm outcomes. Effect sizes in these studies typically indicate that a one standard deviation increase in the use/quality of a set HRM practices is associated with approximately a 20% increase in profits (return on assets) (Becker and Huselid 1998; Gerhart, Wright, McMahan and Snell 2000b; Paauwe and Boselie 2005).

While extremely promising, this research, with few exceptions, has relied on survey responses from one knowledgeable informant per company to measure the content and quality of firms' human resource management systems. Reliance on just one informant makes the measurement of the human resource management construct susceptible to excessive random (i.e., unreliability) and systematic (i.e., bias) measurement error. Research by Gerhart (1999), Gerhart et al. (2000b) and Gerhart, Wright and McMahan (2000a) points to the potentially problematic nature of the construct validity of measures of HR practices, particularly with regard to random measurement error. Gerhart et al. (2000a) replicated a typical SHRM study and estimated that ICC(1,1), a measure of the reliability of a single informant, to be 0.16; significantly lower than Nunnally and Bernstein's (1994) recommended minimum of .70. Wright et al. (2001a) examined

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the interrater reliability of HR practice measures using data from three different SHRM studies and observed an average item ICC(1,1) of 0.25.

Thus, every study that has examined measurement error in measures of HR practices has demonstrated that significant amounts exist, particularly when the measure is taken from a single respondent. Random measurement error leads to a downward bias in observed relationships. If the bulk of the measurement error is random, this would imply that the 'true' impact of HR practices on firm financial outcomes may be significantly greater than current empirical research suggests. However, the measurement of human resource constructs is also susceptible to systematic measurement error. Systematic error is a consistent bias in a measure, and it can either inflate or deflate an observed relationship. This type of error may occur if respondents report HR practices based not on accurate and valid estimates, but rather based on an implicit theory of human resource management. For example, an implicit theory that high performing firms are engaged in progressive HR practices while low performing firms are not engaged in such practices, if it affects subjects' responses to HR surveys, could produce an artificially high correlation between HR practices and firm performance. However, to date, no empirical data exists suggesting that respondents might hold such an implicit theory, nor that this implicit theory might impact their responses.

Thus, the purpose of this study is to examine if one form of systematic bias, implicit human resource management theory, can impact measures of HR practices. We seek to answer two specific questions; (1) Do typical respondents to HR practice surveys in a field setting hold implicit theories regarding the nature of human resource practices? (2) Can implicit theories affect how research subjects describe organizational human resource practices? In order to answer these questions we first review the theoretical rationale and empirical evidence for the impact of implicit theories on subjects' responses in other areas of management research.

## **Review of the literature**

### ***Implicit theories and their impact in organizational research***

The most commonly considered form of systematic bias in organizational research is percept-percept inflation. Percept-percept inflation results when subjects provide information for the independent and dependent variables at the same point in time (Gerhart 1999). This type of bias is less of a threat to the research on HR practices and firm performance because, with only a few notable exceptions (see, for example, Delaney and Huselid 1996; Bae and Lawler 2000; Guthrie 2001), most of the major SHRM studies have collected information regarding firm performance from a source different than the respondent providing information regarding HR practices.

However, a second, and less frequently considered possible source of systematic bias is the implicit theories of the informants. Informants, such as researchers, have implicit theories of human resource management. As organizational research is rarely fully counterintuitive, informant theories of HRM are likely quite similar to researchers' theories (Staw 1975). When responding regarding the characteristics of the organization on a survey, implicit theories may bias the recall of information in a way consistent with the theory the researcher is trying to test. Below we examine the theory underlying the role of implicit theories in organizational research.

### ***Attribution theory and implicit theories***

Attribution theory (Kelly 1973) attempts to explain how people make causal explanations of the world around them and the consequences of these beliefs on behavior. The theory assumes that all individuals behave as naïve scientists seeking to understand the causes of salient outcomes. Possible causes that appear to covary with the effect of interest over time are attributed as likely

causes of the effect. The final choice of a cause or causes is based on the subject's experience in observing cause-and-effect relationships, quasi-experiments in which subjects manipulate possible causal factors, and from implicit and explicit teachings of the causal nature of the world (Kelly 1973, p. 115).

There is a strong conceptual basis for believing that implicit theories affect the responses subjects provide in management research. Completing a survey for management research involves a complex sequence of information processing events. Whether providing objective information or subjective evaluations, subjects must be exposed to the stimulus of interest, attend to the stimulus, encode, and store the information. There is usually a gap between the time the information is stored and retrieved for the purpose of completing a survey. Once retrieved from memory, the information is recorded on the questionnaire. It is unlikely informants encode, store, and retrieve the desired information with perfect accuracy. Even in the absence of memory decay, the entire process poses substantial information processing demands. To reduce these demands, subjects rely on implicit theories to cue the salient information, structure it into coherence, and fill in gaps of missing information (Rush, Thomas and Lord 1977). Thus, when informants retrieve subjective or objective information about their organization that corresponds to an implicit theory of firm performance, the information is likely to be biased consistent with this theory in the direction of the (perceived) performance of the firm (Eden and Leviatan 1975; Downey, Chacko and McElroy 1979; Martell and Guzzo 1991; Martell, Guzzo and Willis 1995; Gerhart 1999).

This chain of events is especially likely to affect subjects providing information on measures for which it is extremely difficult to gather information such as HR practices. Typically, SHRM researchers are interested in the degree of enactment of actual HR practices as opposed to the existence of stated policies (Huselid and Becker 2000). In small organizations (100 to 200 employees), asking the senior HR person about the percentage of managerial, professional, and non-supervisory employees actively managed with customized sets of HR practices will be information that is readily accessible as this person is likely directly responsible for the firm-wide administration of these policies. However, as organizations grow larger (in terms of number of employees) and more complex (in terms of more job categories, more sites, and more business units/divisions), these practices are administered by corporate HR specialists and division specific generalists and thus become less readily accessible to top HR officers (Gerhart et al. 2000b; Scott 1995).

Consider the difficulty for the top HR executive for a 1000-employee firm with three divisions and six job groups to answer the question "What proportion of the workforce is promoted based primarily on merit (as opposed to seniority)?" with a response option asking for proportion of exempt and non-exempt employees (Huselid and Becker 2000, p. 844). First, the respondent would have to know what promotion practices were used for each job in each division. Second, they would need to know the number of employees in each job in each division. Finally, they would have to calculate two weighted averages across all job groups to summarize this information into the proportion of exempt and non-exempt employees managed by the practice. The calculations become exponentially more difficult as the number of divisions, locations, and job groups increase. This process would need to be repeated for each question. It is highly unlikely this information is embedded or easily accessible in firms' HRIS systems (Tansley and Watson 2000). Short of a large scale survey of HR specialists, generalists, line managers, and employees, in all likelihood executive respondents are influenced by an implicit theory to deduce the answers to the survey questions.

Thus, theoretically and conceptually, one can easily understand how and why an implicit theory of HRM might impact respondents reports of HR practices. This conceptual justification is bolstered by empirical data from other areas of management research. The following

discussion examines how implicit theories have been shown to induce response bias in other areas of macro- and micro-organizational research.

### ***Impact of implicit theories in macro-organizational research***

There is extensive theoretical and empirical support for the proposition that implicit theories systematically bias results in macro organizational research. Lawrence and Lorsch (1967) concluded that firms have higher performance when managers align the properties of the organization with the properties of the environment. Suspecting bias, several researchers attempted to replicate the methodology used in their study and came to the conclusion that there is a lack of convergent validity among managers' perceptions, archival measures, and outsiders' perceptions of firm-specific environmental uncertainty (Boyd, Dess and Rasheed 1993; Downey, Hellriegel and Slocum 1975; Tosi, Aldag and Storey 1973). Numerous studies have suggested that managers' communications to outside stakeholders about the external environment are a function of the performance of the firm. Managers in less successful organizations report their environment as unpredictable, while managers in more successful organizations report their environment as more stable (Bettman and Weitz 1983; Salancik and Meindl 1984; McCabe and Dutton 1993).

One stream of strategy research attempts to document the correlates of corporate reputation and its economic value to the firm. There is strong evidence that outsiders' perception of reputation is a function of firm financial performance. Every year since 1983, *Fortune* magazine has published a list of the most admired corporations based on ratings of such attributes as quality of management, quality of products/services, innovativeness, and ability to attract, develop, and keep talented people. These ratings are provided by 8000 outside executives, directors, and market analysts. Although the raters have access to a plethora of archival and insider information with which to develop accurate evaluations, firm financial performance appears to explain 39% to 59% of the variance of these measures (Brown and Perry 1994). It is not such a great leap to believe that if external experts' evaluations of company policies and practices are strongly biased by firm performance, internal informants' responses are also likely to be biased (Gerhart 1999).

### ***Impact of implicit theories in micro-organizational research***

Numerous lab and field experiments have documented how implicit theories impact results in micro-organizational research. Psychologists first suspected that implicit theories biased subjects' responses during early testing of the factor structure of personality measures. Researchers (Norman 1963) noted that similar personality factor structures emerged whether raters had known rates for a long time or only a few moments. Eden and Leviatan (1975) suspected that implicit theories may also affect organizational research subjects. To verify their hypothesis, the authors instructed a large group of undergraduates to complete the leadership scales of a version of the Survey of Organizations for a fictitious organization for which they were given no information. Factor analysis resulted in the same four factor solution found in studies using the scale with subjects of actual organizations. The authors concluded the similar factor structures reflected a homogeneous implicit theory of leadership.

A stream of lab research followed Eden and Leviatan's (1975) study attempting to document the effect of implicit theories on subjects' pattern of responses to surveys in leadership and group process research. Specifically, scholars hypothesized that subjects with information about the performance of a group or leader would provide biased descriptive and evaluative information consistent with a common, implicit theory of performance. Typically, leadership researchers

would first present subjects with either a written description of a leader (Rush et al. 1977), an audio or videotape of a person leading a small group (Mitchell, Larson and Green 1977), or allow the subjects to participate in a small group with a leader (Mitchell et al. 1977). They would then provide subjects with (bogus) information about the performance of the leader, and have the subjects complete standard leader behavioral questionnaires. Group process researchers typically presented subjects with a video of a group engaged in a problem solving activity (Lord, Binning, Rush and Thomas 1978; Rush and Beauvais 1981; Martell and Guzzo 1991; Martell et al. 1995) or allowed subjects to participate in a group activity (Staw 1975). They provided (bogus) performance information, then the subjects completed questionnaires asking them about group behaviors (objective questions) and processes (evaluative questions). Across all studies, subjects given positive performance information provided more positive evaluations of leaders and group processes and 'recalled' the leader or group engaging in more positive behaviors than subjects with negative performance information. Several studies, varying the above methodology, have demonstrated the robustness of these findings and eliminated experiment characteristics and other artifacts as easy alternative explanations (Rush and Beauvais 1981; Lord et al. 1978; Martell et al. 1995).

### **Hypotheses**

The previous discussion suggests that organizational research subjects hold implicit theories about organizational phenomena and that these implicit theories affect subjects' responses to questionnaires. In past research, the impact of implicit performance theories has been demonstrated by showing that information regarding the focal phenomenon's performance impacts the level of ratings provided by knowledgeable subjects. Our study uses a simple simulation exercise to examine the existence of implicit theories regarding sets of human resource practices and examines whether these theories influence subjects' responses to a typical survey of HR practices.

The above literature review suggests that implicit theories impact subjects' responses to questionnaires measuring HR policies and practices. Given that a plethora of research has shown that information about performance (whether individual or organizational) influences subjects' reports of processes, we propose:

*Hypothesis 1:* Subjects given positive cues about firm performance will estimate greater usage of HR practices than subjects given negative cues about firm performance.

*Hypothesis 2:* Subjects given positive cues about firm performance will estimate greater effectiveness of the HR function than subjects given negative cues about firm performance.

If implicit HR theories indeed exist and affect subjects' responses, one would expect they would systematically vary according to experience. As mentioned above, implicit theories are developed and reinforced through the observation of cause and effect relationships, quasi-experiments in which people are able to manipulate possible causal factors, and from explicit and implicit teachings of the causal nature of the world (Kelly 1973). Such experiences could moderate the impact of implicit theories regarding the relationship between HR and firm performance in two ways. First, managers with first-hand experience managing people and using/implementing HR services might have different implicit theories than naïve subjects (i.e. those who have little or no experience in working for real organizations in higher level decision making positions). One might expect that naïve subjects, lacking experience to test implicit theories against real world outcomes might overestimate the relationship between HR practices and firm performance. This leads to:

*Hypothesis 3:* Cues about firm performance will have a stronger impact on subjects with little work experience relative to subject with significant work experience. Subjects with little work experience will report greater differences between high performing and low performing firms on both the estimated extent of usage of human resource practices and evaluation of the human resource function relative to subjects with significant work experience.

Finally, the functional background of the respondents might also moderate the impact of implicit theories on the relationship between HR and firm performance. Subjects coming from an HR background are likely to have both a self-serving bias and stronger identification with the dominant mental models associated with 'professionalized' occupations such as human resource management thus believing that HR practices and the HR function are integrally related to firm performance (Melone 1994; Walsh 1995). However, respondents who are not immersed in the HR ideology may believe that HR has less or even no impact on firm performance. Thus we expect that persons with training and/or experience in the field of human resource management will have stronger implicit theories regarding the covariation of HR practices and firm performance.

*Hypothesis 4:* Cues about firm performance will have a stronger impact on subjects with a background in HRM relative to subjects without such an occupational or educational background. Subjects with a background in HRM will report greater differences between high performing and low performing firms on both the estimated extent of usage of human resource practices and evaluation of the human resource function relative to subjects without such a background.

## **Methods**

### ***Subjects***

Data were gathered from four sub-samples of individuals. First, 55 senior HR executives were contacted by fax through a human resource research institute housed in a large university in the northeast United States to explain the purpose and procedure of the study, and asking them to volunteer to participate. Institute sponsors are virtually all large Fortune 500 firms. Executives representing these companies typically hold the title of Senior Vice President or Vice President of their respective corporations, and in most cases are the persons that would receive a survey regarding corporate HR practices. Executives from 26 (47%) firms agreed to participate in the study themselves along with one or more of their direct reports and one or more of their (peer) top line executives. Each HR executive was mailed an appropriate number of survey packets for themselves and participating colleagues. Of the 26 firms whose HR executives agreed to participate, surveys were received from that HR executive, a direct report and/or a line executive from 19 (73.1%) of them. In total, we received 32 surveys from HR executives and 16 surveys from line executives.

Fifty-six predominately first-year MBA and graduate engineering students were asked to complete surveys in class during the first week of a manufacturing management class resulting in a 100% completion and return rate. A further 38 first year graduate students in HRM were asked to complete surveys in-class during the first week of a training and development class. The same researcher provided an identical explanation and collected the completed surveys again resulting in a 100% return rate.

Fully completed surveys usable for analysis were collected from 26 HR executives 14 line executives, 42 MBA/graduate engineering students, and 31 HR students. The difference

between the number of surveys completed and the number available for analysis was due to missing data.

### ***Procedure***

Subjects were contacted as noted above. HR and line executives received packets with a cover letter explaining the general purpose of the study as well as all of the experimental materials. The survey itself asked subjects to read a scenario of a high (low) performing company, respond to a survey regarding the HR practices of this hypothetical company, turn the page, read a similarly worded scenario describing a low (high) performing company and complete an identical survey regarding HR practices. The first 11 items were highly similar to or the same as 11 of 13 items used in the Huselid (1995) study. Questions 12 through 16 assessed participants' evaluation of the HR functions' contributions to firm performance. These questions were drawn from a study of line and HR managers' perceptions of the effectiveness of the HR function (Wright, McMahan, Snell and Gerhart 2001b). The order of the presentation of the high and low performing company scenario was counterbalanced across subjects. The entire survey can be found in the Appendix. Executive respondents returned the surveys in self-addressed, postage paid envelopes, while student respondents handed their surveys in directly to the second author.

### ***Dependent variables***

Huselid (1995) identified two distinct factors utilizing 11 items of a 13-item scale and used these factors in his original study; each factor had similar effects on firm performance. Later studies combined all the items into one index (Becker and Huselid 1998; Guest, Michie, Conway and Sheehan 2003). Thus, in testing Hypotheses 1 through 4, we aggregated the 11 questions asking respondents to estimate the proportion of employees managed with the listed practices into one scale called HR Practice Usage by calculating of the mean of the 11 items for both scenarios for each respondent. Coefficient alpha for this scale was 0.76 for the high performing company scenario and 0.79 for the low performing company scenario.

Items 12 through 16 asked the subjects to estimate the contribution of the HR function to strategic and financial outcomes. We aggregated these items into a scale called HR Effectiveness by calculating the mean of the five items. Cronbach's alpha for this scale was 0.83 for the high performing company scenario and 0.91 for the low performing company scenario.

### ***Independent variables***

As mentioned above, subjects came from pools of graduate HR students, MBA students, graduate engineering students, HR executives, and line executives. Experience was operationalized by whether the respondent was from the student or the executive sample. The executive sample represented subjects with significant work experience. Graduate students were used to represent inexperienced subjects as they typically have brief professional work histories. We didn't have parallel experience measures to confirm that the experienced (executive) subjects had significantly greater experience than the inexperienced (student) subjects. Two available measures suggested experience differences were significant. The average age of our experienced sample was 44.3 years (sd = 9.0) while the average age of our non-experienced subjects was 26.6 years (sd = 5.6); this difference was statistically significant ( $p < .001$ ). Additionally, for the experienced subjects we had the number of years with the current firm; average was 16.6 (sd = 10.8). For the inexperienced subjects we had number of years of post-bachelor's work experience; average was 4.1 (sd = 4.5). The difference between

these two values was significant at the .001 level of significance suggesting the experienced subjects in our sample had significantly more experience at one firm than the entire work experience of inexperienced subjects.

Functional Background was operationalized by whether the respondent was in HR (either within their organization or as a major) or some other functional area of business. Performance served as the within-subjects factor and was operationalized as to whether the responses were associated the high or low performing firm scenario.

Subjects varied in the order in which they evaluated the high and low performing companies. Thus, Order was operationalized as to whether the subject was presented with the high or low performing firm scenario first. This was only coded to ensure that Order did not confound the results. Thus the study examined the impact of Experience, Functional Background, and Performance on ratings of HR practices in a  $2 \times 2 \times 2$  design.

### Analyses

Testing these hypotheses involved the use of MANOVA with repeated measures. MANOVA was necessary due to the use of multiple dependent variables (HR practice usage and evaluation HR function effectiveness). As ANOVA reduces the inflation of Type 1 error due to making multiple comparisons of treatment groups, MANOVA reduces the error associated with testing the significance of multiple dependent variables (Hair, Anderson, Tatham and Black 1998). Second, repeated measures analysis was necessary as the same subjects provided information for the same measures under two different experimental conditions. Without this type of analysis, the assumption of the independence of the error terms is violated potentially biasing the effect size and direction estimates (Hair et al. 1998).

### Results

The means, standard deviations and intercorrelations of the variables tested in Hypotheses 1 to 4 are presented in Table 1.

As Order of Presentation might confound the results, we investigated the effects of Order on the dependent variables (not shown). The multivariate results (MANOVA with repeated measures) examining whether Order has a significant between- or within-subjects main or interaction effect on the dependent variables indicated that Order was not a significant factor. Thus we concluded that the Order variable could be dropped from the remainder of the analyses.

Table 1. Correlations and descriptive statistics<sup>a</sup>.

Variables <sup>b</sup>	Mean <sup>b</sup>	s.d.	1	2	3	4	5	6
1. Order of scenario presentation <sup>c</sup>	.45	.50						
2. HR or non-HR background <sup>d</sup>	.50	.50	-.03					
3. Experience <sup>d</sup>	.65	.48	-.07	-.22*				
4. HR practice usage (H)	68.92	12.55	-.11	.13	-.33***			
5. HR practice usage (L)	25.42	13.43	.11	-.14	.18	.01		
6. HR effectiveness (H)	4.20	.53	-.06	.26**	-.25**	.48***	-.26**	
7. HR effectiveness (L)	1.94	.68	.01	-.14	.13	-.26**	.35***	-.40***

Notes: <sup>a</sup>Correlations calculated between two categorical variables were estimated using the phi-coefficient. Correlations calculated between categorical and continuous variables were estimated with the point-biserial correlation; <sup>b</sup>Variables followed by 'H' are for the high performing scenario; 'L' for the low performing scenario; <sup>c</sup>Coded as 1 or 0; low performing company first = 0, high performing company first = 1; <sup>d</sup>Coded as 1 or 0; Non HR or non-student = 0; HR or student = 1; \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Hypothesis 1 predicted that subjects would rate the objective descriptions of HR practices of the company with high performance higher than the company with low performance. Hypothesis 2 predicted that the estimated HR Effectiveness of the high performing company would be higher than the estimated effectiveness of the low performing company. Hypotheses 3 and 4 proposed that experience and functional orientation (HR vs. non-HR) would moderate these relationships. Support for Hypotheses 1 and 2 would be demonstrated by a significant within subjects performance-scenario effect in the MANOVA results. Support for Hypotheses 3 and 4 would be demonstrated by significant Experience x Performance and Function x Performance interactions, respectively.

The multivariate results can be seen in Table 2. As can be seen from the top half of Table 2, no between subjects effects were significant. This indicates that any differences across groups were likely due to the experimental manipulation of the performance scenarios and not an overall difference in responses across the groups.

The bottom half of Table 2 shows the results of the multivariate test of within subject effects. The results give preliminary confirmation of Hypotheses 1 and 2 as the results indicated a significant performance effect ( $F = 402.90; p < .001; \eta^2 = .88$ ). To determine which of the two dependent variables were responsible for the significant main effect of Performance identified in the multivariate test, we conducted two separate univariate tests of the effect of the Performance scenarios on the usage of HR practices and the evaluation of the HR function (not shown). To reduce the inflation of Type 1 error associated with multiple univariate tests, we adjusted our alpha by dividing it by the number of univariate tests for a new alpha of .025 (.05/2). Results indicated both dependent variables were significantly different in the low performance condition than the high performance condition ( $p < .001$  for both). Referring to the means of these variables in Table 1, one can see the values are consistently higher for the high performing company than the low performing company as predicted by Hypotheses 1 and 2.

The multivariate results provide preliminary support for Hypothesis 3 as a significant Experience x Performance interaction was observed ( $F = 6.87, p < .01; \eta^2 = .11$ ) (see Table 2). To determine which of the variables were causing the interaction effect identified in the multivariate test, we ran two univariate ANOVAs with repeated measures of the interaction effect of Performance Scenario and Experience for each of the variables (not shown). As before, to prevent the inflation of Type 1 error associated with multiple univariate tests, we adjusted our alpha by dividing it by the number of univariate tests for a new alpha of .025. It appears that both HR Practice Usage ( $p < .001$ ) and HR Effectiveness ( $p < .020$ ) contributed to the multivariate results. Figure 1 graphs the interaction effect for HR practice usage and HR function effectiveness respectively. The interaction appears to be ordinal indicating that although the

Table 2. Summary of multivariate between and within subjects effects.

Variable	Exact $F^a$	$\eta^2$
Between subjects		
HR status	.17	.00
Experience	.63	.01
HR status x experience	.18	.00
Within subjects		
Performance	402.90***	.88
Performance x HR status	1.56	.03
Performance x experience	6.87**	.11
Performance x HR status x experience	.37	.01

<sup>a</sup>Degrees of freedom for all tests were 2 for hypothesis and 108 for error; \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

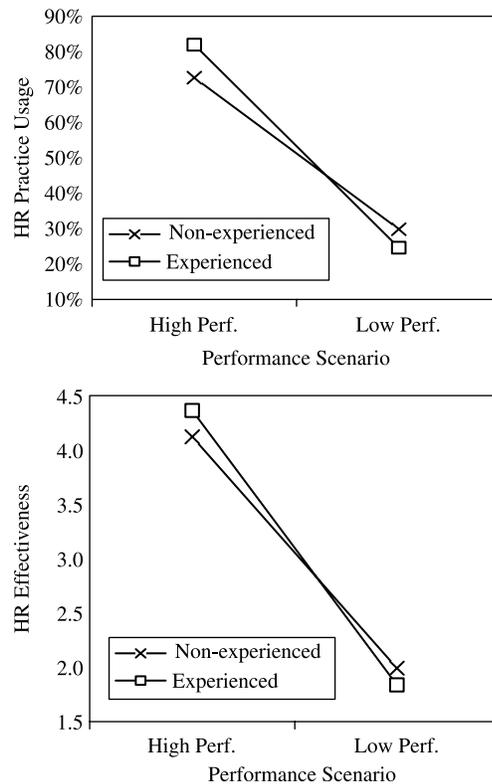


Figure 1. Performance  $\times$  Experience interaction for hr practice usage and evaluation of HR function.

effect of Performance on these variables is dependent on Experience, the main effect of the Performance Scenario is consistent for both groups (Hair et al. 1998). In other words, experienced and non-experienced subjects rate both variables higher in the high performance company than the low performance company, but contrary to expectations, experienced subjects rated the high performance company higher, and low performance company lower, relative to the non-experienced subjects.

Finally, as can be seen in Table 2, no support was shown for Hypothesis 4, as the Function  $\times$  Performance interaction failed to reach significance ( $F = 1.56; p < .22$ ). These results indicate no differences in implicit theories between those with an HR and those without an HR functional background.

## Discussion

Typical HR–Firm Performance studies use one respondent per corporation to indicate HR practices for employees scattered across multiple locations, divisions, and job groups. The information processing requirements in such research designs invite both excessive random and systematic measurement error resulting in questionable estimates of the relationship between HR practices and firm performance. Gerhart et al.'s (2000a, 2000b) and Wright et al.'s (2001b) studies document unacceptably high levels of measurement error across a variety of organizational settings using the single informant research design. This study sought to examine the possibility that systematic measurement error is also associated with the same research

design and found support for the idea that implicit performance theories *can* influence ratings of HR practices in both field and research settings.

We hypothesized: (1) individuals hold implicit theories about human resource management practices and that these theories affect the responses provided by both naïve and knowledgeable informants; and (2) the content of these implicit theories associate the greater use of HR practices with higher levels of firm performance. The results of this study provide clear support for the main hypotheses put forth.

Our results suggest that among the subjects in our sample, performance cues influenced estimates of the use of organizational HR practices and effectiveness of the HR function. Specifically, subjects' implicit theories are consistent with the notion that greater usage of human resource practices and evaluations of the effectiveness of the HR function are associated with firm performance. This finding is consistent with a long line of research suggesting that performance cues affect respondents' objective descriptions of a variety of organizational phenomena, including: leader behavior and effectiveness (Mitchell et al. 1977; Rush and Beauvais 1981); work group behaviors and effectiveness (Martell and Guzzo 1991); and organizational behaviors and contexts (Bettman and Weitz 1983; Salancik and Meindl 1984; Tosi et al. 1973).

Note that these results do not necessarily suggest that past research is flawed. All research requires tradeoffs in order to be conducted, and at this point in time, surveys of key informants seem to be the most plausible methodology for examining the impact of HR practices on firm performance. While problems with this methodology, such as low interrater reliability have been noted, there is still reason to believe that future research will and should continue using it. As will be discussed below, using multiple informants can reduce both random and systematic error.

In addition, in this study, respondents had little information or experience from which to respond, so only implicit theories guided their responses (i.e. all of the variance was error variance, and none was true variance). While this situation is common in policy capturing studies, respondents in past field research had significant experience with the firm and knowledge of the HR practices (i.e., there is a significant amount of true variance in the total variance). Thus, while implicit theories may bias subjects' responses in field settings, it is unlikely to fully determine them to the extent observed here.

However, one must also keep in mind that while the estimates of dollar value impact of HR practices are quite high (e.g. Huselid 1995), the effect sizes are generally quite small. For instance, the benchmark HR-firm performance study (Huselid 1995) demonstrated that HR practices explained an additional 1% or less of the total variance in economic and accounting measures of performance, clearly a small effect size. Guthrie's (2001) study found that HR practices only explained an additional 3 to 6% of the variance in employee and organizational outcomes (even though HR and performance information were collected from the same person). So even if the implicit performance theory accounted for a small amount of total variance, it is possible that it could account for almost all of the observed effect sizes in previous field research. We are not suggesting that this is the case; only that such a hypothesis certainly deserves additional empirical attention.

The results also suggest the moderating effect of experience in the impact of implicit theories. Subjects with less experience tended to report smaller differences between high and low performing firms relative to experienced subjects. This ran counter to our hypothesis. We expected that the naïveté of subjects with little or no work experience would cause them to overestimate the impact of HR on firm performance. On the contrary and surprisingly, experienced subjects indicated a significantly greater impact of HR on firm performance relative to the inexperienced subjects. Rather than a naïveté in overestimating the importance of people

issues in organizations, it appears that non-experienced subjects may have underestimated their importance.

Anecdotal support for this interpretation came from an HR professor who taught (as part of a team) in a field-based manufacturing management course. The MBA and Engineering students completed the survey during the first week of the class. They expressed at the end of the semester that there was 'too much HR.' This perception could not have come from the 'in-class' time because the formal structure of the class was such that the amount of class time devoted to HR was equal to the other functional areas. However, on the numerous site visits during the semester, the issues that company (mostly line) executives discussed inevitably involved people and HR issues, thus, possibly accounting for their perception that HR was overly emphasized. This may simply indicate that most real organizational issues are people issues with HR implications, and that students simply cannot comprehend that until they spend a significant amount of time in an organization.

Somewhat surprising was the failure to find any differences between those from an HR background/orientation relative to those who are not from HR. Given the frequent anecdotal data from HR executives complaining that their line executive counterparts do not seem to 'get' the importance of HR, we fully expected to see less of an effect among the non-HR sample. However, this effect simply was not observed, and this may be explained by 3 reasons. First, given the human capital shortage firms face and the increasing importance that people play in firm success, it may be that line executives are increasingly recognizing the importance of HR practices and activities. Wright and colleagues (2001b) found that when asked to rate how critical a variety of HR practices/services were to their firms' competitive advantage, line and HR executives gave equal importance ratings. Second, while the covariation perceptions may be shared by those both inside and outside of HR, it may be that the causal direction differs. In essence, it may be that HR people believe that it is the HR practices that are driving the firm to perform, while the line people believe that high performing firms have resources to invest in developing state-of-the-art HR practices. Third, the failure to find a difference may be an artifact of the study methodology. By using a senior-level HR executive as the contact within the organization, it opens the possibility that the line executives asked to participate were those who already held a positive view of HR.

These results imply that caution should be taken in the measurement of firms' HR practices and systems. Our recommendations are structured to reduce the sources of random and systematic error, reduce the cognitive demands of informants providing HR information, and develop more theoretically interesting research questions. Drawing on the findings of Gerhart et al. (2000a, 2000b) and Wright et al. (2001a) there is ample evidence that the reliability of a single person providing information about HR practices is very low. The easiest way to reduce random error and thus boost reliability and measurement precision is to collect the HR measures from multiple informants then average the scores for each question across respondents. This process cancels out random error and creates a mean score better representative of the "true score" (Whitely and Doyle 1976; Larson 1979). Wright et al. (2001a) showed with three different samples that the use of multiple raters produced reliability estimates within acceptable guidelines.

The use of multiple informants also reduces or eliminates systematic error. Martell and Leavitt (2002) examined the role of groups in reducing performance cue bias in evaluations of workgroup performance. As expected, individuals were strongly influenced by performance cue information in their observations and evaluations of workgroups. Groups of raters were unaffected.

Future strategic HR researchers, whenever possible, should use multiple informants per establishment to measure HR practices. At the very least, multi-informant responses should

be gathered from multiple subject matter experts (i.e. line supervisors, employees) and used to corroborate the information provided by the single informant. Furthermore, we argue that the difficulty for one person to locate and collect information about the enactment of HR practices across multiple divisions, establishments, and job groups at large (1000 + employee) organizations places an extremely high burden on informants' cognitive capabilities leading to greater reliance on implicit theories. Thus, we would discourage the collection of HR practice information at the corporate level and encourage future research collecting information at the division, establishment and/or job group level.

Our final recommendation suggests that more theoretically interesting research questions will reduce the methodological difficulties identified above. As discussed by Dyer and Reeves (1995) it is highly interesting but not theoretically productive to find relationships between HR practices and stock price. There is no question of the value of the studies conducted by Huselid (1995) and Huselid and Becker (1996) in estimating the value of HR investments and inspiring additional research. However, dozens of similar studies finding a (possibly inflated) correlation between a single informant's rating of HR practices and firm performance measures does not help us understand how to maximize the impact of HR investments and why they might be effective. We suggest that research beginning with questions about the mechanisms by which HR practices impact firm performance will force researchers to use more rigorous methodologies and thereby reduce problems with excessive systematic and random error (Boselie, Dietz and Boon 2005).

A framework for developing more interesting questions can be developed by examining a robust definition of human resource management: Managing the knowledge, skills, behaviors, outcomes, and attitudes of the employees flowing into through, and out of the organization (Beer, Spector, Lawrence, Mills and Walton 1984). Rather than focusing exclusively on the association between HR practices and distal organizational outcomes (profit, stock price, etc.) this definition provides a framework for considering the processes that lead from HR practices to organizational outcomes. Researchers could examine if and how sets of HR practices impact the collective knowledge, skills, behaviors, outcomes and attitudes of employees. One might also consider disaggregating the effects of the flow of employees into, through, and out of the organization on employee and organizational outcomes. Alternatively, researchers may consider focusing on how collective knowledge, skills, behaviors, outcomes, and attitudes affect organizational performance. Finally, researchers may find it theoretically and practically useful to understand better the non-HR manager mental models that lead to resources being allocated to the development of HR systems (Stubbart 1989; Jenkins and Johnson 1997).

### ***Limitations***

Finally, some limitations must be noted. First, in comparison to the wealth of information available to typical respondents to HR surveys the information available to our subjects may seem unnecessarily limited. We suggest our methodology is consistent with the purpose of our study and past research on mental models. Broadly, policy capturing can be used to understand the configuration of the mental models of subject matter experts and the biasing effect of different types of information. The purpose of the policy capturing portion of our study was not to develop detailed mental maps of HR executives but assess the susceptibility of subjects typically providing information to HR surveys to performance cues: HR managers, line managers, and employees. Second, simulations with low levels of realism are commonly used in studies examining the biasing effect of mental models in organizational research. Eden and Leviatan (1975) and Weiss and Adler (1981) gave subjects no information about the focal organization but told subjects to use their imaginations. Rush et al. (1977) had subjects read brief

descriptions of the behavior a supervisor. Mitchell et al. (1977) had subjects listen to an audio tape of an actor leading a group meeting. Lord et al. (1978), Rush and Beauvais (1981), and Martell and Guzzo (1991) had subjects view brief videotapes of actors portraying work groups before completing their questionnaires. Finally, Staw (1975) and Downey et al. (1979) had subjects participate in brief experiential exercises before completing questionnaires. This review suggests past mental model studies did not use subjects fully knowledgeable about the phenomena of interest but purposefully presented little information to assess the impact of mental models better.

Second, there may be a concern that all of our subjects were not VPs of HR. First, as noted above, we used subjects commonly providing data to HR practice questionnaires, HR managers, line managers, and employees. All of the previously cited mental models studies used undergraduates as research subjects while ours used subjects much more likely to be familiar with organizational practices: executives and graduate students with significant work experience.

Third, because the subjects were not randomly selected, generalizability to the larger population cannot be guaranteed. However, Mook (1983) questioned the assumption that generalizability is the goal of all research. He noted that some research is designed to test a theory rather than to generalize to some population. The purpose of our study was to: (1) provide the theoretical and conceptual rationale suggesting that implicit theories might bias the responses of SHRM subjects in the field; and (2) empirically explore whether these theories can bias responses in SHRM research, not to demonstrate that they do affect these responses. Future research will be needed to document the direction and intensity of implicit theory bias in field settings.

An additional limitation is the potential for alternative explanations for the findings. For example, hypothesis guessing or acquiescence might also account for results (Cook and Campbell 1979). Given that subjects were informed that the study was about 'HR practices and firm performance' and was being conducted by HR researchers, they could have guessed that the researchers were hoping to find a positive relationship and attempted to answer the questions accordingly. In order to examine if this was the case, we performed two analyses. First, since the Order of presentation was counterbalanced, we had a group of participants who saw the scenario of the high performing group first and another group who saw the low performing group first. Given that at the point they saw these scenarios they had no idea there was a second similar scenario, we compared the two groups' responses in a between subjects design. The results were almost exactly the same. The performance scenario had a significant main effect ( $F = 65.67$ ;  $p < .001$ ;  $\eta^2 = .79$ ). There was a significant interaction effect for experience and performance scenario ( $F = 2.15$ ;  $p < .05$ ;  $\eta^2 = .11$ ). Performance scenario and HR status did not interact ( $F = 1.12$ ;  $p < .36$ ).

Second, as respondents were aware to some extent of the study's purpose (it was stated as examining the relationship between HR practices and firm performance), this might have influenced their responses. Thus, we took another group of 29 graduate HR students and presented half with the high and half with the low performance scenario absent any description of the study's purpose. They were simply asked to complete the questionnaire. These results were consistent with the above. The multivariate results indicated the effect of the performance scenario was significant ( $F = 15.28$ ;  $p < .001$ ;  $\eta^2 = .84$ ). Two univariate tests indicate both dependent variables (HR Practice Usage and HR Effectiveness) were responsible for the multivariate results. Responses for the high performing scenario were higher than responses for low performing scenario. Clearly, these results do not eliminate hypothesis guessing or demand characteristics as possible influences; but they seem to indicate that these explanations are less likely to be responsible for the results we observed.

Finally, some studies of the HR practice – firm performance relationship measure HR practices in a time period earlier than the performance measures. While this method of data

collection may reduce some of the impact of bias from implicit theories, the strong autocorrelations between accounting and market based measures of firm performance ensures that performance information biasing subjects responses to HR surveys at T<sub>1</sub> will still inflate the HR – firm performance correlation at T<sub>2</sub>, even if the lapse of time between the two measurement periods is substantial (Morton 1998; Chunchi and Xu-Ming 2000).

### Conclusion

Philosophers of science tell us that theory building requires that empirical observations accurately represent theoretical constructs but also the elimination of alternative hypotheses (Kerlinger 1973; Rush et al. 1977). This study poses a serious alternative explanation for the relationship observed between HR practices and firm performance. We found that under conditions of information ambiguity, knowledge of the firm's performance **can** influence respondents' reports of the prevalence of HR practices and the effectiveness of the HR function. This response bias may inflate the estimates of the relationship between HR practices and firm performance, but by how much is not known. Future research should attempt to ascertain the extent to which this bias exists in traditional field surveys in order to more accurately estimate the dollar value that firms can gain by investing in sophisticated HR practices.

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## Appendix

You work for a relatively large (25,000 employee, \$4 billion in sales) organization as the Vice President of Human Resources. Your firm is thought of as highly successful within the industry. It has established a reputation for being among the BEST in **both quality and service**, and it has developed and taken to market a consistent stream of **innovative products**. The result has been that over the past 5 years it has been among

the TOP firms in the industry in **market share, revenue growth, profitability, earnings growth and total return to shareholders.**

You work for a relatively large (25,000 employee, \$4 billion in sales) organization as the Vice President of Human Resources. Your firm is thought of as not very successful within the industry. It has established a reputation for being among the **WORST in both quality and service**, and it has developed and taken to market very few **innovative products**. The result has been that over the past 5 years it has been among the **BOTTOM** firms in the industry in **market share, revenue growth, profitability, earnings growth, and total return to shareholders.**

Assume you just joined the organization and received the following survey. Answer the questions based on the limited information you have.

What proportion of the **managerial/professional/technical** workforce:

1. has their merit increase or other incentive pay determined by a performance appraisal?
2. receives formal performance appraisals?
3. is promoted based primarily on merit (as opposed to seniority)?
4. is eligible for bonuses based on individual performance or productivity/profitability?
5. is regularly administered attitude/satisfaction surveys?
6. is administered an aptitude, skill, or work sample test prior to employment?
7. has access to a formal grievance procedure/complaint resolution system?
8. receives more than 40 hours of formal training per year on a regular basis?
9. receives sensitive information on the company's operating performance (costs, quality, etc.)?
10. What proportion of non-entry level jobs have been filled from within recently (i.e. past 5 years)?
11. For the five positions that your firm hires most frequently, how many qualified applicants do you have per position (on average)?

How **effective** do you think the HR function is with regard to:

12. providing input into the firm's strategy;
13. providing HR systems that support the business strategy;
14. making a value added contribution to the firm;
15. contributing to the firm's competitive position;
16. contributing to bottom-line profitability.