Journal of Applied Psychology
1988, Vol. 73, No. 2, 327-330

0021-9010/88/$00.75

Job Experience Correlates of Job Performance

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Although measures of job experience are frequently-used screening devices in the selection of employees, personnel psychologists have devoted little attention to their usefulness. This article quantitatively summarizes data on the relation between job experience and job performance from a total sample of 16,058. The correlation between job experience and job performance was found to be moderated by two variables: length of experience and job complexity. The highest correlations were obtained in populations with low mean levels of job experience and for jobs that place low levels of cognitive demands on employees. Results appear to be consistent with the causal model of job performance proposed by Schmidt, Hunter, and Outerbridge (1986).

Personnel psychologists have devoted substantial resources to the study of the relation between measures of mental ability and job performance. Large amounts of validity data have been accumulated in the research literature. Quantitative reviews of this literature (Callender & Osburn, 1981; Hirsh, Northrop, & Schmidt, 1986; Pearlman, Schmidt, & Hunter, 1980; Schmidt, Gast-Rosenberg, & Hunter, 1980; Trattner, 1985) have shown mental ability to be a consistently effective predictor for all jobs.

Fewer researchers, however, have examined the relation between job experience and job performance. This is surprising, given that the assessment of job experience is the most frequently used applicant assessment method (Levine & Flory, 1975). Despite a thorough search of the psychological literature, we located only three reviews of the relation between job experience and job performance. Hunter and Hunter (1984) analyzed the results of 425 validity studies and found the mean validity of experience to be .18. McDaniel and Schmidt (1985), using a data base of 89 coefficients, examined the validity of ratings of training and experience (T & E). Ratings were based on the perceived relevance of training and experience to job performance. A mean population correlation of .15 was found between the T & E ratings and job performance. Not only was job experience a weak predictor, but also the estimated standard deviation of the population validity was substantial (.27). Mosel (1952) also examined the value of T & E ratings in the prediction of job performance. His data, which were incorporated into the McDaniel and Schmidt (1985) review, also indicated that judgmental ratings of education and experience were poor predictors of job performance.

Each of these reviews noted that personnel psychologists have devoted little attention to the role of job experience in predicting performance. For example, the experience validity coefficients summarized by Hunter and Hunter (1984) were collected by only one organization, were not the major focus of that organization's research program, and were typically not published. None of the coefficients summarized by Mosel (1952) had been published, and only two coefficients obtained by McDaniel and Schmidt (1985) had been published.

The present research was designed to examine the relation between job experience and job performance. Here, job experience will be defined as length of experience in a given occupation. This definition excludes evaluations of job experience on quality factors, as might be done in formal T & E methods (McDaniel & Schmidt, 1985). Two potential moderators of the experience–performance relation will also be assessed: length of experience and the cognitive complexity demands of the job.

Schmidt, Hunter, and Outerbridge (1986) presented a causal model of the relations among job experience, general mental ability, job knowledge, work sample performance, and job performance. As part of their theory description, they argued that it is the relative, not absolute, individual differences in job experience that produce individual differences in job knowledge and job performance. They clarified their reasoning with an example. If 100 people are hired at the beginning of each year for 4 years, at the end of the 4th year, the least experienced employees have had only 25% as much experience as the most experienced employees (1 year vs. 4 years). However, after 20 years of continuous employment, the least experienced employees have 80% as much experience as the most experienced employees (16 years vs. 20 years). This relative equality of experience is expected to lower the correlation of experience with job performance. Note that this is not the result of conventional restriction in range. For this example, the standard deviation of experience remains constant at 1.12 years. The present research

The opinions in this article are those of the authors and do not necessarily represent the views of the organizations in which they are employed.

The article has benefited from the comments of two anonymous reviewers.

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addresses this hypothesis by examining the experience–performance correlation as a function of the mean level of job experience in the sample. In those samples in which the mean level of job experience is low, the validity of experience is expected to be higher than in those samples in which the mean level of job experience is high.

Jobs vary in the cognitive demands placed on the worker. Using a job complexity measure derived from ratings available in the *Dictionary of Occupational Titles* (U.S. Department of Labor, 1970), Hunter (1980) demonstrated that the complexity of the cognitive demands imposed on the worker explains some of the variation in validity across jobs. Cognitive ability measures increase in validity as job complexity increases. In contrast, measures of psychomotor ability increase in validity as job complexity decreases. These findings are also consistent with those of Gutenberg, Arvey, Osburn, and Jeanneret (1983), who found that information-processing/decision-making job dimensions moderate the validities of cognitive tests. Snow and Lohman (1984) have reported similar findings in several studies in the educational domain.

We examined the moderating effect of job complexity on the experience–performance correlation. There are arguments for and against a moderating relation. Theoretical support for a moderating relation is suggested by the Schmidt–Hunter–Outerbridge causal model of job performance (Schmidt et al., 1986). In this model, both mental ability and job experience share the same causal pathways in shaping individual differences in job performance. Specifically, both variables are thought to affect job performance indirectly through their effects on job knowledge and performance capability. Given the shared causal pathways and the evidence that job complexity moderates the validity of mental ability, it is reasonable to expect that the validity of experience may be moderated by job complexity.

Arguments against such a relation are found in the research on the validity of point-method training and experience evaluations (McDaniel & Schmidt, 1985). In a point-method scoring procedure, the length of an applicant's job experience is a primary determinant of the score assigned to the applicant. In the McDaniel and Schmidt review of this method, the validity of point-method evaluations was not moderated by job complexity. On the basis of this research, one would not expect the validity of job experience to vary with the complexity level of a job.

Method

Data from the General Aptitude Test Battery (GATB) research program were available for the analyses (U.S. Department of Labor, 1970). The GATB was developed by the U.S. Employment Service and has been used for more than 30 years by state employment services. It measures nine aptitudes: intelligence, verbal aptitude, numerical aptitude, spatial aptitude, form perception, clerical perception, motor coordination, finger dexterity, and manual dexterity. The data file obtained for this study contains validity data from studies conducted during 1971 and later. This file contains the individual observations from each of these later studies.

The criterion used for the analysis consisted of the sum of two sets of performance ratings collected from the same supervisor 1 week apart. The reliability was estimated to be .60, based on the findings of King, Hunter, and Schmidt (1980). The performance rating instrument has six primary rating scales covering quantity, quality, accuracy, job knowledge, efficiency, and overall performance. Each of the six scales has five possible values ranging from very little of the performance attribute to very much of the performance attribute. The measure of job experience is the number of months the employee worked in his or her present occupation, regardless of employer. All experience data were collected by employee self-reports. Experience was measured by asking: "How much experience have you had in your present occupation? Include time with both your present and previous employers." No reliability estimate was available for the experience measure. Because employees generally know how long they have worked and have little motivation to distort their responses, the reliability of the experience measure should be high. No correction was made for the reliability of job experience (i.e., the reliability was assumed to be 1.0).

The data base contains data collected from private-sector organizations in all 50 states. The data cover 83 occupational groups, which constitute a diverse sample of all jobs in the economy. A study sample was defined as all persons in the same job, in the same organization (i.e., company), in which the same criterion was used, and in which all data were collected during the same period of time. Only concurrent samples were used. The analyses were limited to concurrent designs because job experience is a dynamic variable. In a predictive study, an individual's level of job experience changes in the time period between the collection of the predictor and criterion data. Because experience is a central construct in the analyses, it is conceptually cleaner to collect data on the three measures at the same time.

The experience–performance coefficients, adjusted for the small-sample bias (Olkin & Pratt, 1958) and range restriction or enhancement, were corrected for unreliability in the criterion. This approach differs in two ways from most validity generalization studies. The first difference is in the use of the Olkin–Pratt correction. This correction is useful for adjusting correlation coefficients based on small sample sizes (the average sample size in this analysis was about 17). Correlations based on small sample sizes underestimate ρ. For example, with a sample size of 10, a population correlation of .214 will yield, on the average, an observed coefficient of .200. This correction has not been used and has not been necessary in validity generalization studies because their typical sample sizes were much larger than in the present study.

The remaining difference between the present and past meta-analyses of validity data is due to the purpose of this study. This study sought to understand the role of job experience in individual differences in job performance in intact work groups. Thus, the present research defined the population variance of job experience as the average amount of variance in the samples examined. Thus, the second difference between this study and validity generalization studies is that the range restriction corrections in the present research were range restriction or enhancement corrections. Those coefficients based on samples with lower-than-average experience variances were corrected upward. Those coefficients from samples with higher-than-average experience variances were corrected downward. This is in contrast to most validity generalization research, in which the population variance of the predictor is the variance in the applicant pool and all coefficients are corrected upward to remove range restriction effects. In the present study, approximately one half of the range restriction corrections reduced the size of the coefficient.

The variance of experience tended to be smaller in low-experience samples than in high-experience samples. Thus, the range corrections tended to adjust observed correlations from low-experience samples upwards and correlations from high-experience samples downward. Samples from more complex jobs tended to have larger mean experience levels and larger experience variances. Thus, the range corrections tended to adjust observed correlations from high-complexity jobs downward.

In the analyses, the unit of observation was the sample and the statistic analyzed was the correlation coefficient. The analysis method used

Table 1
Number of Coefficients and Sample Size by Level of Job Experience and the Cognitive Complexity of the Job

	Low complexity		High complexity		All samples	
Distribution	No. of *r*	*N*	No. of *r*	*N*	No. of *r*	*N*
All samples	315	6,463	632	9,595	947	16,058
0–2.99 years	105	2,438	130	2,052	235	4,490
3–5.99 years	100	2,197	179	2,891	279	5,088
6–8.99 years	73	1,233	160	2,355	233	3,588
9–11.99 years	14	221	73	1,053	87	1,274
12 years and up	23	374	90	1,244	113	1,618

was a meta-analysis of individually corrected coefficients (Hunter, Schmidt, & Jackson, 1982, chap. 3, pp. 68–71). That is, each coefficient was individually corrected for range restriction or enhancement and measurement error in the criterion. Distributions of range restriction and measurement error artifacts were not used. Cognitive complexity was defined following Hunter (1980). The majority of the occupations in the data set fell into two of the five cognitive complexity levels. The complexity variable was dichotomized to permit the most meaningful analysis of the data. The most balanced division was achieved by assigning jobs with Hunter's (1980) complexity code of 1 to 3 to the high-complexity category, and those jobs with a complexity code of 4 or 5 to the low-complexity category. Our job complexity classification, although the best available for this analysis, is a relatively coarse categorization and may serve to underestimate the magnitude of the complexity moderator.

Results

The study decision rules resulted in 947 samples with total sample size of 16,058. Samples were assigned to one of two job complexity groups. Within each complexity group, the samples were further assigned to one of five job experience groups on the basis of mean experience (0–2.99 years, 3–5.99 years, 6–8.99 years, 9–11.99 years, and 12 years and up). This assignment process resulted in a 2 × 5 matrix with 10 cells (2 levels of job complexity; 5 levels of job experience). The coefficients assigned to each cell were meta-analyzed to determine the sample-size-weighted mean corrected correlation coefficient for the cell. Table 1 shows the number of samples and the total sample size for each analysis; Table 2 shows the mean observed correlation and the mean and standard deviation of the population correlation distribution.

A comparison of the mean observed and population correlations shows the pattern of the range corrections in this analysis. The variance of experience increased as the mean level of experience in the sample increased. Because the population variance of experience was defined as the average variance of experience across samples, the coefficients in the low-experience groups tended to increase after correction. Conversely, the corrected (population) coefficients from the high-experience samples tended to be smaller than the observed coefficients. The range corrections are necessary for the meaningful comparison of coefficients across the moderator subgroups. For example, note the observed correlations in the All samples column in Table 2. The observed coefficients ($\bar{r}$) remain relatively constant across the experience subgroups, even though the experience variances increase as the mean experience level increases. The differences in the experience variances across the experience moderator groups mask the declining importance of experience as a predictor. The population correlations are adjusted for the differences in experience variance and are more interpretable. The population correlations are discussed later.

Consistent with the formulations of Schmidt et al. (1986), the validity of experience decreased as the mean level of job experience in the sample increased. In the analysis of all samples, and in four of the five analyses using job experience subgroups, the experience validities were higher for the low-complexity jobs than for the high-complexity jobs. The reversal in the 12-years and higher job experience group may be due to sampling error, given the small number of observations in the low-complexity group.

Discussion

Results indicate that for all levels of job experience and for both low- and high-complexity jobs, the correlation between job experience and job performance is positive. Two moderator effects are apparent. Regardless of the complexity level of the job, the mean level of job experience in the sample is a strong moderator of the correlation between job experience and job performance. Consistent with the hypotheses of Schmidt et al. (1986), the correlation is highest for samples with low mean levels of job experience. The correlation drops off sharply as the

Table 2
Validity of Job Experience as a Function of Level of Job Experience and the Cognitive Complexity of the Job

	Low complexity			High complexity			All samples		
Distribution	$\bar{r}$	$\bar{\bar{\rho}}$	$SD_{\hat{\rho}}$	$\bar{r}$	$\bar{\bar{\rho}}$	$SD_{\hat{\rho}}$	$\bar{r}$	$\bar{\bar{\rho}}$	$SD_{\hat{\rho}}$
All samples	.22	.39	.28	.20	.28	.00	.21	.32	.19
0–2.99 years	.23	.54	.32	.16	.42	.00	.20	.49	.00
3–5.99 years	.21	.34	.27	.20	.31	.31	.20	.32	.29
6–8.99 years	.22	.26	.16	.23	.25	.17	.23	.25	.17
9–11.99 years	.31	.31	.00	.20	.17	.12	.22	.19	.08
12 years and up	.19	.12	.03	.21	.16	.08	.20	.15	.07

Note. $\bar{r}$ = observed coefficients; $\bar{\bar{\rho}}$ = population coefficient; $SD_{\hat{\rho}}$ = estimated population standard deviation.

mean level of job experience increases. For the low-complexity samples with a mean job experience level of under 3 years, the correlation was .54. For the low-complexity samples with a mean level of job experience of 12 years or greater, the correlation is only .12. A similar sharp drop is seen for the high-complexity samples. Here, the correlation drops from .42 to .16. Job complexity also appears to moderate the correlation between job experience and job performance. With one exception, the correlation is always higher in the low-complexity group than in the high-complexity group. However, the difference in correlation is not constant. The largest difference between the complexity groups is at the lowest level of job experience.

The Schmidt–Hunter model may also be useful in explaining the moderating effect of job complexity on the experience–performance correlations. Our data indicate that experience is a better predictor of job performance for low-complexity jobs than for high-complexity jobs. In the Schmidt–Hunter model, job experience has its primary causal impact on job performance through its causal impact on job knowledge. We suggest that job experience has a greater impact on job knowledge and job performance for low-complexity jobs than for high-complexity jobs because of the differences in availability of educational preparation for high- versus low-complexity jobs. For high-complexity jobs, one can gain job knowledge through both formal education and job experience. However, for low-complexity jobs there are fewer formal education sources from which one can gain job knowledge. For example, there are substantially more educational programs directed at professional and skilled jobs than there are for semiskilled and unskilled occupations. We suggest that this difference in sources of job knowledge between high- and low-complexity jobs may account for the moderating effect of job complexity on the experience–performance relation. In low-complexity jobs, job experience is often the sole nonability source of job knowledge. Thus, it is reasonable that the correlation with job performance should be higher relative to high-complexity jobs, in which job knowledge may be gained both through job experience and formal education.

This theory may also explain the much larger *initial* difference in the correlation (.54 vs. .42 at 0–2.99 years of experience). In low-complexity jobs, the initial period on the job is critical for the acquisition of job knowledge. Because new workers bring little or no job knowledge to the job, the initial rate of learning of job knowledge with experience is very high, and differences in job knowledge between those with little (e.g., 3 months) and those with more (e.g., 2 years) experience are very great. The complexity moderator has less impact at higher levels of job experience because employees in both complexity groups are more equal, through experience, in their acquisition of job knowledge.

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Received March 10, 1987
Revision received August 7, 1987
Accepted October 29, 1987 ■