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A META-ANALYSIS OF THE VALIDITY OF THE EMPLOYEE ATTITUDE INVENTORY THEFT SCALES

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ABSTRACT: This article summarizes the criterion-related and construct validity evidence for the *Employee Attitude Inventory* (EAI) theft scales. These paper-and-pencil measures were designed to help employers gain information about theft among current employees. It is argued that the validity of the theft scales is dependent on the proportion of dishonest employees in the group being screened. Using meta-analysis techniques, the theft scales were shown to have useful levels of validity regardless of the proportion of dishonest employees in the population being screened. Also, the validity coefficients were relatively invariant across organizations and occupations. Thus the available evidence supports the use of the EAI as an effective tool for identifying dishonest employees. However, given that the present analyses are based on a relatively small set of data, the authors' conclusions should be regarded as preliminary. These analyses should be repeated as additional validity data becomes available.

Employee theft is a major concern of many businesses. The American Management Association (1977) conducted a study that documented that the biggest source of loss due to crimes against business came from employee theft ($7.5 billion). Hollinger and Clark (1983) anonymously surveyed employees from 21 hospitals (N = 4,111), 10 manufacturing firms (N = 1,497), and 16 retail stores (N = 3,567). The average percentage of

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employees admitting to theft equaled 32.2% for hospitals, 26.2% for manufacturing firms, and 41.8% for the retail sector.

In addition, Morgenstern (1977) estimated that nearly 30% of all business failures resulted from the theft of cash, merchandise, and property by employees. The American Management Association (1977) found that in 20% of the companies going out of business, a significant contributing factor for the failure was the financial loss caused by employee theft and dishonesty. Jones (1983a) pointed out that not all companies go out of business due to costly acts of employee dishonesty, but they do fail to reach their full potential as competitive retailers. Thus employee theft appears to be a costly problem to industry and therefore warrants the attention of industrial psychologists.

Companies use both preemployment screening and current employee identification programs to manage employee theft. Common preemployment screening programs include both the use of paper-and-pencil honesty tests (Ash, 1970, 1979; Jones & Terris, 1985; Terris & Jones, 1983, 1985) and polygraph examinations (Baumer & Rosenbaum, 1984; Bickman, Rosenbaum, Baumer, Kudel, Christenholz, Knight, & Perkowitz, 1979; Lykken, 1984) that screen out employment applicants who are at high risk to steal, once hired. The effectiveness of these programs has been reviewed and critiqued elsewhere (Baumer & Rosenbaum, 1984; Sackett & Decker, 1979; Sackett & Harris, 1978; Sharf, 1984). This article focuses on the identification of *current employee thieves*.

Four main approaches exist to identify current employee thieves. They are: (1) policing the workplace by supervisors and undercover security personnel (Baumer & Rosenbaum, 1984); (2) using surveillance systems or closed-circuit television cameras (Kramarsky, 1976); (3) using in-house polygraph examinations to investigate specific thefts or to screen current employees periodically (Sackett & Harris, 1984); and (4) using paper-and-pencil honesty tests to identify employee thieves (Reid, 1983).

Research on the validity of the first three approaches has been previously reviewed and critiqued (Baumer & Rosenbaum, 1984; Bickman et al., 1979; Kleinmuntz & Szueko, 1984; Lykken, 1984; Sackett & Decker, 1979; Sharf, 1984). However, no review exists for paper-and-pencil honesty tests developed for current employees. Therefore, the purpose of this article is to review and critique validation research for the London House *Employee Attitude Inventory* (Jones & Terris, 1984; London House, 1982). This inventory was specifically designed to provide information relevant to controlling theft by current employees.

PAPER-AND-PENCIL INVENTORIES

Paper-and-pencil inventories have recently been developed to provide an alternative to the in-house polygraph examination. These inventories are used by companies to gain information about employee theft. The three most widely used inventories include the *Reid Survey* (Reid, 1983), the *Stanton Inventory* (Klump, 1976), and the *London House Employee Attitude Survey* (London House, 1982). Research is not available for either the *Reid Survey* or the *Stanton Inventory*. Hence, this article focuses on the *Employee Attitude Inventory (EAI)*.

The EAI has two major uses (Jones & Terris, 1984). First, the EAI can be used to conduct specific theft investigations. That is, the EAI can be used to gain employees' admissions or theft of their information about a fellow employees' theft. The EAI results can be corroborated by interviewing high-risk personnel to discuss further questionable information on their inventories. Other company follow-up procedures can include polygraph examinations, interrogations, audits, undercover surveillance, and so on.

Second, the EAI can be used to screen current employees periodically. The EAI has a deterrent effect on theft in the workplace, since employees are less likely to steal if they think their employer is committed to preventing theft (Hollinger & Clark, 1983). The use of the EAI conveys such a message and thus may help to suppress theft behavior among employees (Jones & Terris, 1984).

The EAI consists of 156 items comprising seven different subscales. The three EAI theft scales are: theft admissions, theft attitudes, and theft knowledge. Items in the theft admission scale attempt to assess actual theft admissions. A typical item is, "How often do you actually take merchandise home from work without paying for it?" The theft attitude scale measures how employees feel about theft. Items cover such topics as temptation to steal, rationalization of theft, fear of prosecution for theft, and the appropriateness of punishments for theft. Knowledge of actual thefts by co-workers is assessed by the theft knowledge scale. Some items in the knowledge scale are inquiries about observations of theft by co-workers, while other items assess beliefs about the extent of theft in the company.

META-ANALYSIS AS A REVIEW METHOD

In recent years a set of methods has evolved that allows for quantitative cumulation of results across studies. These methods, collectively called "meta-analysis," facilitate the development of accurate conclusions about validity based on a body of past studies. Glass (1976) introduced this term and developed several useful procedures. Schmidt, Hunter, and their associates (Hunter, Schmidt, & Jackson, 1982; Pearlman, 1982; Schmidt, Gast-Rosenberg, & Hunter, 1980; Schmidt & Hunter, 1977; Schmidt, Hunter, Pearlman, & Shane, 1979) have developed additional procedures that extend and complement Glass's initial effort. Procedures that yield comparable results have been developed by Callender and Osburn (Callender & Osburn, 1980, 1981; Callender, Osburn, & Greener, 1979) as well as Raju and Burke (1983).

The Schmidt–Hunter meta-analysis method used in this study is based on the idea that much of the variation in results across studies is due to statistical and methodological artifacts rather than to substantive differences in underlying relationships. Some of the artifacts typically reduce the correlations below their true (i.e., population) values. The method determines the variance attributable to sampling error and differences between studies in reliability and range restriction, and subtracts that amount from the total amount of variation, yielding estimates of the true variation across studies and the true average correlation.

In the context of personnel evaluation, meta-analysis is used to evaluate the situational specificity of a selection of screening procedure. If one assumes that the validity of a test is dependent on the situation in which it is used, one would expect that the observed variation in validities cannot be accounted for by variance attributable to artifacts. Meta-analysis results typically address this question by addressing the percentage of observed variance in the validity distribution that is attributable to statistical artifacts. Another way of expressing the variation in the true validities is to report the validity value at or above which 90% of all estimates of the true validity lie. This value is termed the 90% credibility value.

General Design of This Study

Using the data available on the EAI theft scales, several meta-analyses were conducted to summarize the existing knowledge of the criterion and construct validity of the EAI honesty scales. As data permitted, the meta-analyses were conducted for a composite of the EAI honesty scales and separately for each of the three honesty scales.

Problems Unique to the Meta-analysis of Theft Measures

The collection of good criterion data is a major problem for personnel psychologists. Researchers who wish to use employee theft measures as criteria face additional problems, because the frequency of detected dishonest acts that can be attributed to a specific employee is very low. Some investigators have dealt with this problem by selecting study sample subjects to maximize the variance of the honesty criteria (Sackett & Decker, 1979). In a typical validity study in this area, about half of the subjects are judged, based on a criterion measure (e.g., polygraph), to be dishonest, while the remainder of the sample are judged to be honest. This subject selection method causes the study sample to have a larger criterion variance than the average employee population. Due to this enhancement of the criterion variance, the observed validity coefficients are inflated above the values expected in a typical employee pool.

In most validity studies of more traditional predictors (e.g., mental ability tests), coefficients are attenuated by range restriction in the predictor. In contrast, the coefficients from some theft scale studies are inflated, because of range enhancement in the criterion. To estimate properly the validity of the theft scales in their typical operational use, the coefficients need to be corrected for range enhancement. This requires knowledge of the criterion variance in the study group and of the criterion variance in the typical employee group. If one views employee dishonesty as a dichotomy (i.e., an employee is either honest or dishonest), the variance of the criterion in the study group is known. Specifically, the proportion of honest and dishonest employees in the study group is known, and as will be shown later, this knowledge permits the calculation of the criterion variance.

A problem, however, arises in estimating the criterion variance in a "typical" employee group. To calculate this variance, one must know the proportion of honest and dishonest employees in the employee population. No good estimates of this figure are available. Also, the proportion of dishonest employees may vary by industry (Hollinger & Clark, 1983). Furthermore, the proportion of dishonest employees in a population depends on how the population is defined. For example, if the theft scales are administered to all employees in a company, the proportion of dishonest employees will be lower than if the testing is targeted to a group with a high probability of being dishonest. Since there is no typical employee group to which the theft inventory is administered, the true operational validity of the EAI theft scale varies with the proportion of dishonest employees in the employee population being examined.

METHOD

The meta-analysis method used in this study is one that individually corrects each observed validity coefficient for range enhancement and criterion unreliability (Hunter et al., 1982, p. 68). The distributions of these individually-corrected coefficients also were corrected for sampling error to yield an estimate of the variance in the true operational validity. This method section describes the corrections performed in the meta-analysis, and the modifications made to the data before the analysis.

Range Enhancement Corrections

To estimate the true operational validity of the theft scales, one must estimate the proportion of dishonest persons in the employee population. Since this figure is not known, and is very likely to vary across employers, the meta-

TABLE 1

Assumed Values of Range Restriction in the Criterion

Assumed % of Dishonest Employees	Assumed Criterion *SD* in the Employee Pool	Assumed Criterion *SD* in the Study Sample	Ratio of the Sample *SD* to the Employee Pool Standard Deviation
50%	.500	.500	1.00
30%	.458	.500	1.09
10%	.300	.500	1.67
2%	.140	.500	3.57

Note: A ratio value of greater than one indicates enhancement in the criterion variance.

analyses in this study were repeated four times, assuming that either 50%, 30%, 10%, or 2% of the employees were dishonest. To calculate these population standard deviation estimates, a dichotomous variable was created to reflect a honest/dishonest dichotomy. Four distributions of this dichotomous variable, corresponding to the four assumed levels of employee dishonesty, were created to permit estimation of the population standard deviations. The standard deviation of the distribution of a dichotomous variable equals the square root of p times q, where in this study p is the percentage of honest employees, and q is the percentage of dishonest applicants.

The results are shown in Table 1. The first column is the assumed percentage of dishonest persons in the employee pool. The second column is the estimated standard deviation of the honest criterion in the employee population. The third column is the estimated standard deviation of the honesty criterion in the validity studies. The last column is the ratio of the study sample standard deviation to the employee pool standard deviation. If one assumes that half of the employees were dishonest on the job, then the criterion variance in the existing studies is not distorting the operational validity of the measures. However, if one assumes that only 2% of the employee pool is dishonest, the criterion standard deviation in the validity studies is 3.74 times the employee pool criterion standard deviation, and the studies sharply overestimate the validity of the predictor.

The four sets of analyses yielded four estimates of the true operational validity of the theft scales. To be conservative, one may use the lowest estimate. To be less conservative, but probably more accurate, one may use the estimate that most closely corresponds to the estimated proportion of dishonest employees in a given setting.

Criterion Measurement Error Corrections

While the observed validity coefficients in this data set were inflated by criterion enhancement, measurement error in the criterion acted to attenuate the observed coefficients. Also, differences among the studies in the reliability of the criterion artificially increased the variance in the observed correlation coefficients. To correct for these artifactual influences, each coefficient was individually corrected for measurement error. Three criteria were available: supervisor ratings, polygraph measures, and self-reports. The reliability of supervisor ratings was assumed to be 0.60. The mean reliability of 0.60 is based on a study by King, Hunter, and Schmidt (1980), which showed that the mean inter-rater reliability of performance ratings is 0.60 if the individual's supervisor's judgement is measured with perfect reliability. Since performance rating instruments do not have perfect inter-rater reliability, this reliability estimate is probably an overestimate of the true mean reliabilities in these studies. Thus analyses based on these distributions are likely to underestimate the true mean validity.

Little data is available on the reliability of polygraph measures of theft. Based on one review of reliability studies with the polygraph (Sackett & Decker, 1979), the reliability of polygraph criteria was assumed to be 0.75. Finally, the reliability of self-reports measures of theft was assumed to be 0.90, based on research conducted by Lavelli, Terris, and Jones (1985). These assumed reliabilities were used to correct the observed coefficients for criterion measurement error.

Sampling Error Corrections

Observed validity coefficients vary from their population values due to noninfinite sample sizes. Previous meta-analytic work in personnel psychology has shown that most of the variance in distributions of observed validity coefficients often can be attributed to sampling error. The sampling error formula used in this analysis is that which is appropriate for individually corrected coefficients (Hunter et al., 1982, p. 71). Since the coefficients were individually corrected for range enhancement and criterion unreliability, none of the variance in the *corrected* coefficients, submitted to the meta-analysis, can be attributed to differences among studies in range enhancement and criterion unreliability.

Meta-analysis of the Theft Scales

Most of the EAI theft scale studies report validity data for the three theft scales used as a composite predictor. This composite was scored with a multiple cutoff strategy. For other studies, the composite score was defined as the total number of scales failed. Still other studies reported individual validity coefficients for each of the three scales. For this last group of studies, a composite correlation was calculated using the individual scale validity coefficients and the intercorrelations of the theft scales.

TABLE 2

Validity Data for the EAI Theft Scale Composite

Study	N	r
Lavelli, Terris, & Jones (1985)	320	.463
Jones & Terris (1982)	165(330)	.429
Jones (1983b)	42(84)	.480
Jones (1983c)	46(92)	.521
Jones, Terris, & Allen (1984)	20	.660
Jones & Terris (1983)	24(48)	.520
Alford (1985)	63	.520

Note: N is the sample size. When the correlation used in the analysis was a mean coefficient, the sample used was defined as the number of subjects time the number of components in the average. This adjusted sample size is enclosed in parentheses. The correlation coefficient is r.

In brief, seven studies reported or permitted the computation of validity data for the three EAI theft scales when used as a composite. The Jones (1983b) study reported two coefficients, the first based on a multiple cutoff scoring strategy and the second based on the total number of scales failed. The average of the two coefficients was used in the analysis. Jones, Terris, and Allen (1984) reported one coefficient from the EAI theft scales that were scored with a multiple cutoff. Jones and Terris (1983) reported two coefficients based on multiple cutoff scoring of all the EAI scales (including nontheft scales). The two coefficients were calculated from the same sample using two different supervisory ratings as criteria. Since coefficients using only the theft scales were not reported, the coefficients using all EAI scales were included in the analysis. The average of the two coefficients reported in this study was used in the analysis. One coefficient using a multiple cutoff scoring procedure was reported by Alford (1985). The data presented by Lavelli, Terris and Jones (1985) permitted the calculation of a composite from the validity coefficients for each theft scale and knowledge of the intercorrelations among the three scales. Two composites were calculated from the EAI theft scales in the Jones and Terris (1982) study and in the Jones (1983c) study. In both of these studies the mean of the two composites was used in the analysis.

Problems are encountered in the meta-analysis of averaged coefficients, because the sampling error of an averaged coefficient is not known. To estimate conservatively the sampling error of an averaged coefficient for this analysis, the sample size for a study was defined as the

TABLE 3

Validity Data for each EAI Theft Scale

Study	*N*	*r*
	Admission Scale	
Lavelli, Terris, & Jones (1985)	320	.420
Jones & Terris (1982)	165(330)	.380
Jones (1983c)	46(92)	.485
	Attitude Scale	
Jones (1981)	89	.560
Lavelli, Terris, & Jones (1985)	320	.390
Jones & Terris (1982)	165(330)	.355
Jones (1983c)	46(92)	.460
	Theft Knowledge Scale	
Lavelli, Terris, & Jones (1985)	320	.310
Jones & Terris (1982)	165(330)	.300
Jones (1983c)	46(92)	.315

Note: *N* is the sample size. When the correlation used in the analysis was a mean coefficient, the sample was defined as the number of subjects times the number of components in the average. This adjusted sample size is enclosed in parentheses. The correlation coefficient is *r*.

total number of subjects times the number of components in the average. Table 2 displays the composite data before correction for range enhancement and criterion unreliability. This data base was the major focus of this meta-analytic investigation.

Inspection of Table 3 shows that three studies reported validity data for both the theft admissions and the theft knowledge scales, while four studies reported validity data for the theft attitude scale. As with the meta-analysis of the composite measure, each coefficient was individually corrected for range enhancement and criterion unreliability. As in the composite analysis, an adjusted sample size was used when the coefficient was a mean of two or more coefficients. For each of the three theft scales, Table 3 displays the validity coefficients before correction for range enhancement and criterion unreliability.

Two studies provided data relevant to the construct validity of the

EAI scales. Alford (1985) reported correlations between the three theft scales and "pre-employment honesty scale scores." Terris and Jones (1985) used the theft admission and theft knowledge scales to compare a group of employees screened for honesty at the time of hire with an unscreened group. The Terris and Jones (1985) F test statistic was transformed into a correlation coefficient (Hunter et al., 1982, p. 98). The data displayed in Table 4 permitted a meta-analysis of theft admission and theft knowledge scales to assess their correlations with alternative measures of the honesty construct. Note that in the Terris and Jones study (1985), the measure with which the EAI theft scales was correlated is not an ideal operationalization of the honesty construct. The screened/not-screened dichotomy is a good measure of honesty only to the extent that the unscreened employees were dishonest.

A final set of reports, reviewed by Jones (1985), consisted of two studies (Brown, 1984; Joy, Moretti, & Allen, 1985) where the unit of analysis was either an organization or a store region. In the Brown (1984) study, the theft scale scores for eight convenience store regions were correlated with the average shrinkage rate per region. In the Joy et al. (1985) study, three "non-problematic profitable restaurants" were compared with three less profitable restaurants on the EAI theft scales. It was inappropriate to include these studies in the meta-analyses, because their level of data aggregation was different from each other (e.g., a single restaurant versus a region of stores), and from studies where the unit of analysis is one person. Since the level of data aggregation influences the magnitude of the correlation (Rosenthal, 1984, p. 14), the inclusion of studies with different units of observation would distort the population mean and variance estimates.

RESULTS AND DISCUSSION

The results of the analyses to assess situational specificity and validity generalization for each theft measure distribution are presented in Tables 5 through 12.

Situational Specificity

The results of the analyses addressing the issue of situational specificity are presented in Tables 5 through 8. The situational specificity hypothesis is addressed by examining the degree to which the observed variation in validities is a result of the operation of statistical artifacts. If after subtraction of variance due to statistical artifacts, substantial variance remains in the distribution of true validity coefficients, one concludes that the remaining variance may be due to factor structure differences in job performance and, thus, situational specificity is supported.

TABLE 4

Validity Data Relevant to Construct Validity

Study	Scale	*N*	*r*
Alford (1985)	Admission	63	.72
	Attitude	63	.67
	Knowlege	63	.35
Terris & Jones	Admission	254	.350
(1985)	Knowledge	254	.144

The first column in the tables identifies the distribution analyzed. The next five columns of data present the total sample size and the number of validity coefficients on which each distribution was based; the mean and standard deviation of each distribution; and the standard deviation predicted on the basis of sampling error. The next two columns display the percentage of observed variance in the distribution accounted for by sampling error and the residual standard deviation.

The data in Table 5 indicate that for all distributions most, if not all, of the variance in the validities can be attributed to sampling error. The true operational validity of the EAI theft composite does not vary as a function of the organization in which it is used, as a function of the occupational group to which it is administered, or as a function of the scoring system (e.g., multiple cutoff versus continuous scores). For a given ratio of honest to dishonest employees, the validity of the EAI theft composite is constant. Tables 6, 7, and 8 display the situational specificity results for the three theft scales. For all scales, the situational specificity hypothesis is rejected, because a large percentage (usually 100%) of the variance in the validities can be attributed to sampling error, and the resulting residual standard deviation is at or near zero. Thus based on data collected to date, it appears that the EAI theft scales are valid in all situations and all jobs. It should be stressed that while this review is the best available summary of this literature at present, the amount of research in this area has been limited. Sackett, Harris, and Orr (1986), using a series of Monte Carlo computer simulations, investigated the likelihood that meta-analysis will detect true differences in correlation coefficients. In the present study such true differences would exist if the population validity of the EAI theft scales varied with different jobs or different situations. Results obtained by Sackett et al. indicated that moderate true differences would not be detected with small numbers of studies or small sample sizes. Since the present investigation was based on few studies, conclusions about the invariance of the EAI validities are tentative. Thus these analyses should be rerun as additional data becomes available.

TABLE 5

Situational Specificity Hypotheses for Composite Theft Scales

Distribution	Total *N*	No. *r*'s	Mean *r*	Obs. *SD*	Pred. *SD* Based on Sampling Error	% Var. Acc. For	Residual *SD*
Distribution Corrected for Sampling Error							
Sampling Correction	957	7	.47	.04	.06	100%	.00
Distribution Corrected for Sampling Error and Measurement Error in the Criterion							
Sampling & Criterion Unreliability	957	7	.53	.07	.07	100%	.00
Distributions Corrected for Sampling Error, Criterion Measurement Error, and Range Enhancement							
Assume 50% Dishonest	957	7	.53	.07	.07	100%	.00
Assume 30% Dishonest	957	7	.50	.07	.07	100%	.00
Assume 10% Dishonest	957	7	.35	.05	.05	88%	.02
Assume 2% Dishonest	957	7	.17	.03	.02	76%	.01

Note: When the percentage of variance due to sampling error exceeded 100%, value was truncated to 100%.

Validity Generalizations

Validity generalization may be defined in several ways (Pearlman, 1982). Using the most conservative definition, validity generalization may be applied to a measure when the true variance of the distribution of its validities equal zero. In that case there is no room for variables to moderate the relationship. By a second definition, validity may be generalized when most of the true validities in the distribution are greater than a minimum useful validity. The variance remaining in the distribution may result from moderators or uncorrected-for artifacts, but this remaining variance is sufficiently small to allow the measure to be valid for most of its

TABLE 6

Situational Specificity Hypotheses for EAI Admission Scale

Distribution	Total *N*	No. *r*'s	Mean *r*	Obs. *SD*	Pred. *SD* Based on Sampling Error	% Var. Acc. For	Residual *SD*
Distribution Corrected for Sampling Error							
Sampling Correction	742	3	.41	.03	.05	100%	.00
Distribution Corrected for Sampling Error and Measurement Error in the Criterion							
Sampling & Criterion Unreliability	742	3	.46	.03	.06	100%	.00
Distributions Corrected for Sampling Error, Criterion Measurement Error, and Range Enhancement							
Assume 50% Dishonest	742	3	.46	.03	.06	100%	.00
Assume 30% Dishonest	742	3	.42	.04	.05	100%	.00
Assume 10% Dishonest	742	3	.29	.03	.04	100%	.00
Assume 2% Dishonest	742	3	.14	.01	.02	100%	.00

Note: When the percentage of variance due to sampling error exceeded 100%, the value was truncated to 100%.

applications. For the purposes of this study, predictors will be said to have generalizable validity if the value at the lower 10th percentile of the distribution of estimated true validities is greater than zero (Callender & Osburn, 1981). Thus this definition of validity generalizability is directly analogous to significance testing (in significance testing, a correlation is statistically significant when the lower bound of its confidence interval does not include zero).

Tables 9 through 12 display the validity generalization results for the EAI theft scales. The first column of each table identifies the distribution analyzed. The next two columns of data show the sample size and the number of validity coefficients in each distribution. Columns 4, 5 and 6

TABLE 7

Situational Specificity Hypotheses for EAI Attitude Scale

Distribution	Total *N*	No. *r*'s	Mean *r*	Obs. *SD*	Pred. *SD* Based on Sampling Error	% Var. Acc. For	Residual *SD*
Distribution Corrected for Sampling Error							
Sampling Correction	831	4	.40	.06	.06	78%	.03
Distribution Corrected for Sampling Error and Measurement Error in the Criterion							
Sampling & Criterion Unreliability	831	4	.44	.06	.06	96%	.01
Distributions Corrected for Sampling Error, Criterion Measurement Error, and Range Enhancement							
Assume 50% Dishonest	831	4	.44	.06	.06	96%	.01
Assume 30% Dishonest	831	4	.41	.06	.06	89%	.02
Assume 10% Dishonest	831	4	.28	.05	.04	70%	.03
Assume 2% Dishonest	831	4	.14	.02	.02	60%	.02

present the estimated true operational mean validity ($\bar{\rho}$), standard deviation ($SD_{\bar{\rho}}$), and 90% credibility value for the distribution of true validities.

Table 9 summarizes the validity generalization evidence for the EAI theft scales when used as a composite. Based on the data collected to date, for all distributions, the EAI theft composite showed validity generalization because the lower 90% confidence value is above zero. In employee populations where 50% of the employees are dishonest, the expected operational validity of the composite is 0.53. For employee groups where only 2% of the employee population is dishonest, the validity of the composite is 0.17. Thus for any employee group, the EAI theft composite provides a useful degree of validity that generalizes.

Tables 10, 11, and 12 display the validity generalization results for the three theft scales. As was the case for the composite measure, the individ-

TABLE 8

Situational Specificity Hypotheses for EAI Knowledge Scale

Distribution	Total N	No. r's	Mean r	Obs. SD	Pred. SD Based on Sampling Error	% Var. Acc. For	Residual SD
Distribution Corrected for Sampling Error							
Sampling Correction	742	3	.31	.01	.06	100%	.00
Distribution Corrected for Sampling Error and Measurement Error in the Criterion							
Sampling & Criterion Unreliability	742	3	.34	.01	.06	100%	.00
Distributions Corrected for Sampling Error, Criterion Measurement Error, and Range Enhancement							
Assume 50% Dishonest	742	3	.34	.01	.06	100%	.00
Assume 30% Dishonest	742	3	.31	.01	.06	100%	.00
Assume 10% Dishonest	742	3	.21	.01	.04	100%	.00
Assume 2% Dishonest	742	3	.10	.00	.02	100%	.00

Note: When the percentage of variance due to sampling error exceeded 100%, the value was truncated to 100%.

ual scales show useful validity regardless of the proportion of dishonest employees in the population. Furthermore, this validity may be generalized. A comparison of the mean levels of the true operational validities shows that the composite measure yields the highest validity, followed by the admission scale, the attitude scale, and the knowledge scale.

Construct Validity Results

The construct validity of the EAI theft measures was examined by correlating the theft scales with other measures of honesty (Alford, 1985; Terris & Jones, 1985). This analysis was a less-than-ideal test of the

TABLE 9

Validity Generalization Results for Composite Theft Scales

Distribution	Total N	No. r's	$\bar{\rho}$	SD_{ρ}	90% C.V.
Assume 50% Dishonest	957	7	.53	.00	.53
Assume 30% Dishonest	957	7	.50	.00	.50
Assume 10% Dishonest	957	7	.35	.02	.32
Assume 2% Dishonest	957	7	.17	.01	.15

TABLE 10

Validity Generalization Results for EAI Admission Scale

Distribution	Total N	No. r's	$\bar{\rho}$	SD_{ρ}	90% C.V.
Assume 50% Dishonest	742	3	.46	.00	.46
Assume 30% Dishonest	742	3	.42	.00	.29
Assume 10% Dishonest	742	3	.29	.00	.29
Assume 2% Dishonest	742	3	.14	.00	.14

construct validity of the EAI scales because, as noted earlier, the alternate theft measure in the Terris and Jones (1985) article was less than optimal. The results shown in Table 13 indicate that the theft admission scale is correlated 0.42 with the alternate theft measures, while the theft knowledge scale is correlated 0.18 with the alternate measures. The positive correlations support the construct validity of the EAI theft scales. While definitive conclusions about the construct validity of the measures will require additional research, the results collected to date are supportive.

CONCLUSIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

This report has summarized the validity evidence for the EAI theft scales. Based on all available data, the three theft scales, whether used as a

TABLE 11

Validity Generalization Results for EAI Attitude Scale

Distribution	Total N	No. r's	$\bar{\hat{\rho}}$	$SD_{\hat{\rho}}$	90% C.V.
Assume 50% Dishonest	831	4	.44	.01	.43
Assume 30% Dishonest	831	4	.41	.02	.39
Assume 10% Dishonest	831	4	.28	.03	.25
Assume 2% Dishonest	831	4	.14	.02	.12

TABLE 12

Validity Generalization Results for EAI Knowledge Scale

Distribution	Total N	No. r's	$\bar{\hat{\rho}}$	$SD_{\hat{\rho}}$	90% C.V.
Assume 50% Dishonest	742	3	.34	.00	.34
Assume 30% Dishonest	742	3	.31	.00	.31
Assume 10% Dishonest	742	3	.21	.00	.21
Assume 2% Dishonest	742	3	.10	.00	.10

composite or individually, show useful levels of prediction that generalizes across situations and occupations. As with any predictor, the validity of the EAI theft measures is dependent on the variance in the criterion. The validity of the scales is at a maximum when 50% of the employees are dishonest. While the validity of the EAI theft scales declines as the percentage of dishonest persons in the employee pool deviates from 50%, the validity is always sufficiently large to be useful, and is always generalizable.

The pattern of validities for the composite and the individual scales is reasonable. The composite score yields the highest validity. This is due to the increased reliability of the composite and to the broader sampling of the honesty construct. The theft admission scale is the most valid of the

TABLE 13

Meta-analysis Results for Construct Data

Distribution	Total *N*	No. *r*'s	Mean *r*	Obs. *SD*	Pred. *SD* Based on Sampling Error	% Var. Acc. For	Residual *SD*
Theft Admission	317	2	.42	.15	.06	15%	.14
Theft Knowledge	317	2	.18	.08	.07	81%	.04

three individual scales. This is reasonable, given that the scale's content is the most similar to the content of the criterion (i.e., theft admissions).

The validity of the attitude scale is higher than that of the knowledge scale. Since the knowledge scale was primarily designed to measure employees' knowledge of others' theft, it would not be expected to be the best predictor of the respondent's honesty. In fact, this scale would only be expected to have validity when employee thieves were more likely than nonthieves to know of or highly suspect others' thefts. The validity of the job knowledge scale would be expected to be higher if the criterion tapped the incidence of theft among other employees. To some extent, this was accomplished in the Brown (1984) study, where the criterion was the average shrinkage rate across a group of stores. In that study, the job knowledge scale was the best predictor.

This meta-analysis has demonstrated that the EAI theft scale studies, conducted to date, report sufficient information such that, when cumulated, informative conclusions may be drawn. This does not imply, however, that there is no room for improvement in the studies' reporting practices. For example, while seven studies reported data on the validity of theft scales used as a composite, only four studies reported validity data on the individual scales. Future studies should report the manner in which the sample members were selected, the intercorrelations among the predictors, the intercorrelations among the criterion, and the zero-order validities for each theft scale. Although the present study has documented the validity and validity generalizability of the scales, the largest meta-analysis contained only seven coefficients. To permit greater confidence in the results, additional meta-analyses should be conducted as more studies become available.

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