

## Assessing Gender-Related Differences in Achievement Orientation Using Two Different Achievement Scales

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The consistent finding that the achievement scales of the Adjective Check List (ACL) and Edwards Personal Preference Schedule (EPPS) are not correlated has led researchers to question the validity of both of these measures. This article presents evidence indicating that although these measures are independent, they can predict the same performance criteria. Of interest is that the EPPS predicts outcomes for men, whereas the ACL predicts performance for women. A topical examination of each measure's relationships to other scales provides a tentative rationale for these scales' orthogonality that does not call into question the validity of either measure.

The purpose of this article is to examine the relationship between two self-report measures of achievement motivation: the EPPS and the ACL. Two research studies are presented to empirically demonstrate the orthogonality of these measures as well as their relationship to performance of men and women. We address questions about validity surrounding these instruments by providing a rationale that justifies such independence and empirically demonstrate that although they are orthogonal, these instruments are both capable of predicting the same outcome.

Since McClelland, Atkinson, Clark, and Lowell (1953) published their seminal work on achievement motivation, the Thematic Apperception Test (TAT) has become the workhorse of *n Achievement* research. However, there has been increasing dissatisfaction with the TAT regarding its psychometric properties. Entwisle's (1972) review of the literature indicated the lack of research evidence supporting the reliability and validity of this instrument. This concern over the psychometric integrity of the TAT led researchers to develop objective measures of need achievement that would be not only more robust psychomet-

rically, but also easier to score and interpret. The EPPS and ACL were two such objective measures based on Murray's needs hierarchy. Research on both measures has indicated that not only do they possess acceptable reliabilities but the achievement scales are also correlated with relevant extratest behaviors that lend strong credibility to their construct validity (Bendig, 1958; J. E. Edwards & Waters, 1983; Fowler, 1973; Gough & Hall, 1975; Izard, 1962; Krug, 1959; Lindgren, 1976; Steers, 1975; Weiss, Wertheimer, & Groesbeck, 1959; Worrell, 1960).

However, Entwisle also noted the lack of convergence among different objective measures of achievement motivation. In a study by Piedmont, Gonyea, and Ozer (1984), the achievement scales of the EPPS and ACL were used. The results indicated, as noted in other studies (Heilbrun, 1958, 1959; Wohl & Palmer, 1970), that there is no relationship between the ACL and EPPS achievement scales. Bouchard (1968) applied a multimethod-multitrait matrix to the ACL and EPPS and found that only the dominance and order scales met the criterion for convergent and discriminant validity. Further, correlations between the two achievement scales were nonsignificant. Megargee and Parker (1968) also noted that these two measures should not be considered parallel forms of Murray's need for achievement.

This consistent independence between these two scales has led Entwisle (and others just noted) to question the validity of one or both of these measures. However, it is our contention that this conclusion is premature, because it is based on the simple intercorrelations between these scales. We feel it may be possible for these scales to assess different aspects of the same construct. To test this hypothesis, the studies reported here use performance on a task that should be related to achievement motivation as a dependent measure (deCharms, Morrison, Reitman, & McClelland, 1955; Marlowe, 1959). If both scales can predict the same achievement outcome and still remain independent, it seems plausible to conclude that both assess nonredundant aspects of a more global construct. As such, any determination of validity based on their convergence is inappropriate. As these studies illustrate, this distinctiveness appears to be gender related.

Research by Gaeddert (1985) and Gaeddert, Noelting, and Littlefield (1984) indicated that although men and women do not differ in the types of achievement behaviors they engaged in, there were differences in the manner in which they evaluated their performance. Specifically, "... men were more likely than were women to define their success in terms of external referents (gaining prestige through accomplishment) ... women were more likely ... to define success by referring to internal standards ('I did what I set out to do')" (Gaeddert, 1985, p. 300). It is the thesis of this article that the EPPS and ACL each capture different aspects of these gender-related achievement orientations.

The two independent studies reported here examine the relationships between these two achievement scales and relevant performance criteria. The

ability of each scale to reliably predict the same performance outcome would be further evidence of their validity. The differential relatedness of these measures to gender holds important implications for understanding achievement related dynamics in men and women.

The cognitive tasks employed here embodied qualities (e.g., fact retention and synthetic-analytic abilities) which have been shown to be related to individual differences in achievement motivation (Schmeck & Grove, 1979). Because college students were used as subjects, we felt that memory tasks would more closely parallel the kinds of tasks achievement-motivated individuals confront in an academic setting. This would make the task more relevant to them. Further, because all testing was done in a classroom setting, it was expected that there would be a sufficient number of academic cues present to arouse the achievement motivation of all subjects. This would help ensure that the two scales would be relevant predictors of performance.

#### STUDY 1

This study directly examines the relationship between the ACL and EPPS to a common performance criterion. Of particular interest is the role that gender plays in moderating the relationships between these scales and performance. First, however, a detailed description of each of these two achievement scales is in order.

The EPPS (Edwards, 1959) consists of 28 items presented in a forced-choice format; subjects select that statement of the two they feel is more characteristic of themselves. Each pair of statements are matched in terms of their degree of social desirability. Achievement items included: "I like to do my very best in whatever I undertake," "I like to be successful in things undertaken," and "I would like to accomplish something of great significance." Split-half reliability for the achievement scale is .74 and test-retest (1-week interval) is .74. Both values are within acceptable limits. Izard (1962) found low, but significant correlations between the EPPS achievement scale and academic achievement. Worrell (1960) found this measure correlated to performance on a paired-associates learning task; Edwards and Waters (1983) found this scale a useful component in predicting college attrition.

The ACL (Gough & Heilbrun, 1980), consists of 300 adjectives from which subjects are asked to check those they feel are self-descriptive. There are 38 items on the achievement scale, 25 indicative of achievement motivation (e.g., active, capable, industrious, and resourceful) and 13 contraindicative (e.g., apathetic, indifferent, lazy, and slipshod). Reliabilities of this scale are quite adequate for both men and women (.85—alpha, .72 test-retest; .82—alpha, .73 test-retest, respectively). Fowler (1973) found relationships between this scale and certain

physiologic indices. Using this scale in tandem with the affiliation scale, Lindgren (1976) found his composite measure related to such criteria as supervisor's ratings and academic grades.

### Method

Subjects consisted of 135 introductory psychology students (88 women and 47 men), all of whom volunteered and received course credit for their participation. All subjects received a 24-item, multiple-choice recognition task which tested their understanding of a presented passage. Twelve items related to factual content—subjects were to recall specific factual information presented in the passage (e.g., "According to the text, subjects showed what type of need to dream?"), and 12 items related to subject's conceptual understanding of the passage—subjects were required to synthesize the information presented and make judgements concerning it (e.g., "Another title for this passage could be?"). The text was a 375-word passage narrating the psychological function of dreams (Krech, Crutchfield, & Livson, 1974, pp. 507-508). The dependent variables were the number of correct responses to each section of the recognition task.

### Results and Discussion

The observed means and standard deviations for the two achievement scales were consistent with the normative data presented in their respective manuals, whereas values on the performance measures reflected no evidence of any ceiling or floor effects. The psychometric integrity of this cognitive task has previously been determined (Piedmont, 1988).

Table 1 presents the intercorrelations between performance and the achievement measures by gender. For both sexes, the intercorrelations among the achievement scales are nonsignificant (men:  $r = .08$ ; women:  $r = .04$ ). However, for men, the EPPS is significantly correlated to performance on the factual dimension ( $r = .41$ ),  $p < .01$ , but not on the conceptual dimension. The ACL appears independent of performance. For women, on the conceptual dimension,

TABLE 1  
Correlation Matrix of Performance and Person Variables for Men and Women

Variable	1.	2.	3.	4.
1. Conceptual scores	—	.43***	.25	.04
2. Factual scores	.30***	—	.41***	.10
3. EPPS Achievement scores	.25**	.06	—	.08
4. ACL Achievement scores	.16	.35***	.04	—

Note. Men ( $n = 47$ ) above the diagonal; women ( $n = 88$ ) below the diagonal.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .005$ .

the EPPS is significantly correlated to performance ( $r = .25$ ),  $p < .01$ , whereas the ACL does not appear relevant. For factual performance, only the ACL is correlated to performance ( $r = .35$ ),  $p < .005$ .

In examining the ACL and EPPS correlations with factual performance, a gender difference emerges. Regression analyses indicated that the EPPS predicted performance for men,  $F(1, 44) = 9.48$ ,  $p < .01$ , and not for women,  $F(1, 85) = .32$ ,  $p = ns$ , whereas the ACL predicted outcome for women,  $F(1, 85) = 5.89$ ,  $p < .01$ , but not for men,  $F(1, 44) = .63$ ,  $p = ns$ . The correlation between the EPPS and performance is significantly greater for men than women ( $z = 1.98$ ),  $p < .05$ , two-tailed. On the other hand, the relationship between the ACL and performance was greater for women than men ( $z = 1.4$ ),  $p < .15$ , two-tailed, but not significantly so. The pattern of relationships on this dimension clearly suggest the gender relatedness of these measures in predicting performance.

Given these findings, the differences in magnitude of the correlations between the two achievement scales and performance were examined within each gender. We were interested in determining if, for men, the EPPS correlated more strongly with performance than did the ACL, whereas for women, if the ACL was a better predictor of performance than the EPPS. On the conceptual dimension, there were no differences between these correlations for men and women. On the factual dimension, for men, the correlation between the EPPS and performance was significantly higher than the ACL-performance correlation,  $t(44) = 1.67$ ,  $p < .05$ . This indicates that for men the EPPS is a better predictor of performance. For women, the correlation between the ACL and performance was significantly higher than the EPPS-performance correlation,  $t(85) = 2.1$ ,  $p < .025$ . This signifies that for women the ACL is a better predictor of performance than the EPPS.

The results of this study present two points of interest: (a) the ACL and EPPS are independent of each other (this independence does not reflect the invalidity of either one or both of these measure, rather, both are useful in predicting performance), and (b) the predictiveness of the ACL and EPPS on performance appears gender dependent.

## STUDY 2

The purpose of this study was to determine if the pattern of relationships between the two measures of achievement motivation hold true in a different learning situation. In the previous study, the gender relatedness of the ACL and EPPS was most clearly evidenced on the factual dimension. We now selected a cognitive task that embodied the same features of fact retention but would also enable us to more fully control the amount of information that subjects would be able to process.

### Method

Subjects consisted of a new sample of 146 introductory psychology students (58 men and 88 women), all of whom received course credit for their participation. The cognitive task for this study consisted of 40 adjectives (words that were not trait descriptive, e.g., crowded, dusty, humid, and squalid) presented to the subjects via a slide projector, with one word appearing on each slide. All subjects then received a 200-item recognition task which included the 40 words. Subjects were asked to check off all the words they remembered seeing from the list. The dependent variable was the percentage of correct response given in relation to the total number of words selected by the subject on the recognition task.

### Results and Discussion

For men, the EPPS is significantly related to performance ( $r = .26$ ),  $p < .05$ . Scores on the ACL are orthogonal to both performance ( $r = -.11$ ) and scores on the EPPS ( $r = -.03$ ). For women, the opposite pattern emerges. The ACL is significantly correlated to performance ( $r = .23$ ),  $p < .05$ , whereas the EPPS remains independent ( $r = .07$ ). However, there is a significant correlation between the two measures ( $r = .25$ ),  $p < .05$ . Because all the correlations performed between these two measures, both in this article as well as in the research reviewed, have been found to be trivial, it appears likely that this finding may be a Type I error. However, even if this relationship were indeed accurate, this finding argues strongly for the gender relatedness of the ACL and EPPS; even under circumstances where the two measures were highly correlated in women, only the ACL was relevant to predicting performance.

Finally, a gender difference also emerges in this sample. Regression analyses indicate that the EPPS predicts performance for men,  $F(1, 55) = 4.26$ ,  $p < .05$ , and not for women,  $F(1, 85) < 1$ ,  $p = ns$ , whereas the ACL predicts performance for women,  $F(1, 85) = 4.87$ ,  $p < .05$ , but not for men,  $F(1, 55) < 1$ ,  $p = ns$ . The correlation between the ACL and performance is significantly greater for women than men ( $z = 1.99$ ),  $p < .05$ , two-tailed. There is no reliable difference in the correlations between the EPPS and performance for the two sexes.

Again, differences in the correlations between the two achievement scales and performance were examined within each gender. For women, the differences in the magnitude of correlation between the two achievement scales and performance approached significance,  $t(85) = 1.29$ ,  $p < .1$ , with the ACL being the better predictor. For men, the correlation between the EPPS and performance was significantly higher than the ACL-performance correlation,  $t(55) = 1.99$ ,  $p < .025$ . Thus, the EPPS was a better predictor of performance in men than the ACL.

The results of this study add further confirmation to the hypothesis that

although the EPPS and ACL are orthogonal, they nonetheless are able to differentially capture gender-related differences in achievement motivation. Not only does the EPPS predict performance for men but the ACL does not, the resulting EPPS-performance correlation is higher than the ACL-performance correlation. The reverse holds true for women, although the effect is not as strong. A theoretical rationale for these findings, which does not call into question the validity of either measure, is more formally addressed in the following section.

### OVERALL DISCUSSION

Given the finding that these measures are differentially related to gender with regard to their ability to predict a criterion, it is suggested that these independent aspects of achievement motivation are correlated with the way men and women conceptualize and/or express this motivation (Gaeddert, 1985). The theoretical question that arises, then, is why do these measures relate in this manner to performance for men and women? Although our data do not directly speak to this question, an examination of the conceptual meaning of high scores on these measures provide a starting point for understanding what aspects of achievement motivation these scales are assessing.

In examining the data provided by Edwards (1959), the achievement scale was negatively related to the affiliation, abasement and, nurturance scales of the EPPS, and positively correlated to the dominance and aggression scales. With regard to the Guilford-Martin Personnel Inventory (Edwards, 1959), the achievement scale of the EPPS was positively related to the objectivity scale, negatively related to the agreeableness scale, and independent of the cooperativeness scale. Such relationships portray a high scorer on the EPPS achievement scale as being success-oriented, determined, assertive, and independent. High scorers are concerned with accomplishment, recognition, and social status. Endorsement of items such as "I would like to be a recognized authority in some job, profession, or field of specialization," "I like to solve puzzles and problems that other people have difficulty with," and "I like to accomplish tasks that others recognize as requiring skill and effort," clearly reflect this focused, goal-directed competition against a standard of excellence that is recognized by others as socially meaningful.

Given this type of meaning, the EPPS may be focusing on tasks that are central to a traditionally masculine conception of achievement motivation. For men, achievement motivation may be seen as a means to an end (learning a skill and being able to use this skill as a source of material security). To succeed, men are expected to be assertive and dominant. Their goal is to attain greater proficiency in their job rather than being concerned with friendships. The establishment of affiliative networks is usually done in terms of professional

issues (e.g., attending a convention or conference), and such ties serve as a resource for attaining greater success in one's work as well as providing important social feedback. This interpretation is consistent with the hypothesis that men have an external achievement orientation (Gaeddert, 1985; Travis, Burnett-Doering, & Reid, 1982; Veroff, 1977). The EPPS items clearly reflect this need for social prestige.

Women, on the other hand, possess a more intrinsic achievement orientation. According to Veroff (1977), women place greater emphasis on the process of accomplishment. Achievement strivings reflect attempts to actualize internal, personally meaningful standards or criteria. Success is therefore evaluated in terms of the degree to which one attains these criteria. This formulation is very consistent with Gough and Heilbrun's (1980) conceptualization of high scores on the achievement scale of the ACL. As they noted, "The motivation to succeed seems to lie less in competitive drives than in a consistent need to live up to high and socially commendable criteria of performance" (p. 8). The items included in the ACL scale (e.g., aggressive, alert, ambitious, assertive, capable, dominant, efficient, forceful, conscientious, industrious, independent, resourceful, persistent, etc.) are also consistent with this interpretation. They have the distinct quality of being less goal-directed, vis-à-vis the EPPS, and appear related to a type of motivation that underlies competitive strivings. The items appear to reflect qualities of individuals that are associated with the achievement of success, however it may be defined.

An interesting point to note is that several of these adjectives are distinctly "masculine" in nature (e.g., aggressive, assertive, dominant, independent, etc.). Yet, despite such items the achievement scale does not predict an achievement outcome for men. That it predicts performance for women further underscores the difference between men and women in their achievement orientations.

Given these meanings to high scorers on the ACL and EPPS, their mutual independence should be expected. Although assessing different aspects of a larger construct, these differences reflect salient characteristics of men and women. Translated into methodological terms, researchers need to be cognizant of the measurement instruments they employ in their empirical investigations of achievement motivation. It appears likely that the equivocal results found with women often reported in the literature reflect neither a lack of achievement motivation in women nor the invalidity of the assessment measures used, but rather show a lack of fit between the assessment instrument and the achievement orientation of the subject. Sensitivity to each of these components will enable researchers to bring greater measurement precision and explanatory power to their empirical designs.

## CONCLUSIONS

This article has two important implications for contemporary research: (a) the ACL and EPPS are useful instruments for predicting performance on cognitive



tasks. Given their relative independence from each other, their ability to predict specific performance criteria suggests that these instruments assess non-redundant aspects of achievement motivation; and (b) the EPPS appears more useful in capturing the external achievement orientation of men, whereas the ACL is sensitive to the internal orientation of women. The two independent research studies presented here provide convincing support to not only the validity of these measures, but also attest that their scores reflect meaningful gender-related differences in achievement motivation.

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