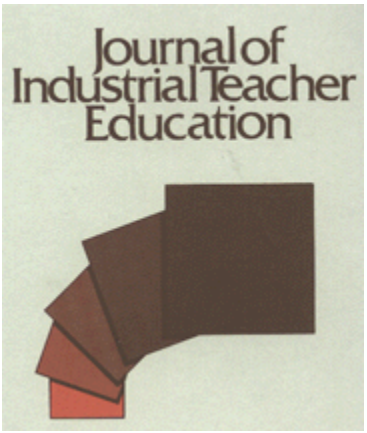

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Janet Z Burns jburns@gsu.edu

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Relationships Between Selected Demographic Variables and Employee Work Ethics as Perceived by Supervisors

Paul E. Brauchle
Md. Shafiqul Azam
Illinois State University

"Work ethic" is a cultural norm that advocates being personally accountable and responsible for the work that one does. It is based on a belief that work has intrinsic value to the individual (Cherington, 1980; Yankelovich & Immerwahr, 1984). The concept of "work ethic" relates to the desirable work attitudes, values, and habits expected from employees. Positive work attitudes are attributes that are desired from every employed person, from the lowest level of employees to the CEO of the organization.

It has been said that it is more important to keep a job than to obtain a job. To obtain a job, positive work attitudes may or may not be necessary; but to keep a job, positive work attitudes are essential. For example, Beach (1982) cited research indicating that fully 87% of persons losing their job or failing to be promoted were found to have "improper work habits and attitudes rather than insufficient job skills or knowledge" (p. 69).

One trend in the labor force has been the increase of information age jobs that are high-discretion positions that require considerable thinking and decision-making on the part of workers (Miller, 1986). This is in contrast to more traditional industrial age jobs that tend to require obedience rather than decision-making skills (Azam, 2002). Because of the large

impact that these information age workers have on the organization, positive work attitudes may be more important than ever before.

Moreover, the United States may be termed as a country of immigrants. These immigrants have brought diverse cultural attitudes, social norms and beliefs to the workplace. The problems of U.S. employers are thus far more complex than those of employers in other industrialized countries where most of the work force is homogeneous. For this reason, an understanding of the status of work attitudes in the contemporary workplace is essential. Differences in work attitude across demographic variables such as gender, age, education, and length of employment may provide important information that would be of value to schools and other workforce development programs, and may help in the design of programs, both in educational institutions and in the workplace, that are conducive to enhancing positive work attitudes in the labor force.

Research investigations on the effects of demographic variables such as gender, age, level of education, and length of full-time employment on occupational work ethic have been reported in the literature with differing results. A number of studies in the past 20 years reported that females are more likely to exhibit better work attitudes than their male counterparts (Azam, 2002; Petty & Hill, 1994; Hill, 1997; Hall, 1990, 1991; Furnham & Muhiudeen, 1984; Wollack, Goodale, Witjing, & Smith, 1971), while others found no correlation at all between gender and work ethic (Tang, 1989). Petty (1995) found significant differences in work ethic for the age group 36-55 years from the five age groups studied. Some researchers found positive relationships (Wollack, et al., 1971; Goodale, 1973), while others found no relationship (Aldag & Brief, 1975; Buchholz, 1978; MacDonald, 1972) or negative relationships (Tang & Tzeng, 1992) between education and work attitudes. In a recent study, Boatwright and Slate (2000) obtained stronger work ethic values for females, persons aged 20-24 years, and college students than others.

Work attitudes can be measured by administering an appropriate standardized instrument to the employee. However, in an actual workplace the supervisor, rather than the employee, is usually the rater. A supervisor's rating of an employee's work attitudes seems intuitively to have value because employee attitudes manifested in the working environment are more visible to the supervisor than to the employee, and supervisor opinions have greater ecological veracity (Pinneau & Milton, 1958) than self-ratings. The previously mentioned studies had one characteristic in common: they measured *self-rated* work attitudes. For this study, responses were obtained from supervisors regarding information and noninformation employees that they supervised. The Occupational Work Ethic Inventory (OWEI) (Petty, 1995) was used to obtain data.

Information employees are employees who perform information jobs. An information job is one which is characterized by the following: (a) comprehensive, open-ended tasks requiring high responsibility and critical thinking; (b) tasks which need little supervision and require active individual initiative; (c) tasks that require creative solutions to nonroutine situations with deviations handled by the lowest level of specialist; (d) continued improvement of performance being as important as completing tasks; and (e) integrated work processes and increased ownership of product and process by the individual (Law, Knuth, & Bergman, 1992).

Noninformation employees are those who perform non-information jobs. A noninformation job is characterized by (a) narrowly defined tasks that require minor responsibility, (b) heavy supervision and passive order taking, (c) specific response to a limited number of possible problems with deviations from the norm handled by specialists, (d) task completion being more important than continued improvement of performance, and (e) specific tasks being independent of the purpose of the organization's overall operation (Law, et al., 1992).

Purpose

This study investigated the relationships between demographic variables (i.e., gender, age, level of education, and length of full-time employment) and manufacturing employees' work attitudes as rated by their supervisors. The following questions were investigated.

1. What is the relationship between the demographic variables of gender, age, level of education, and length of full-time employment and work attitudes of information employees when their supervisors rated the employees' work attitudes?
2. What is the relationship between the demographic variables of gender, age, level of education, and length of full-time employment and work attitudes of noninformation employees when their supervisors rated the employees' work attitudes?

Methodology

The data for this study were derived from the supervisors of information and noninformation employees of six randomly selected manufacturing industries in the central Illinois area. Supervisor perceptions of work attitudes of these employees were recorded using the OWEI. The OWEI has been found to be a highly reliable instrument with recorded Cronbach's coefficient alphas above 0.90 for different groups of participants (Hill, 1992; Petty, 1995; Hatcher, 1995). For this study, the OWEI was used without modification to collect responses from the employees. A slightly modified OWEI was used to collect responses from the supervisors.

In regression analysis, it is very important to maintain a large number of degrees of freedom; and degrees of freedom are lost as the number of variable increases (Korth, 1975). Because the number of dependent variables was very large (50), the degrees of freedom available were very small, making the result of a multiple regression analysis difficult to interpret. Moreover, the instrument items (based on employee responses) were found to be highly correlated, which may lead to a spurious interpretation. In view of this, and because the type and the location of the population of the present study were different from previous factor analytic studies on the OWEI, an exploratory factor analysis was conducted to identify the factors represented by the 50 OWEI items for the respondents in this study. The analysis was conducted by using responses from both information and noninformation employees, as well as supervisors (Brauchle & Azam, 2003).

Using the SPSS 10 data reduction technique, a principal component analysis (PCA) was used to analyze the dimensionality of the 50-item OWEI. Semantic analysis enabled the factors to be identified as follows: *Teamwork, Dependability, Ambition, and Self-Control*. Because of the complexity of obtaining regression-based factor scores for supervisor responses, factor scores were computed by a simple but effective method mentioned by Kerlinger (1973). For this study, a loading of 0.45, which represents 20% of the variance, was used to include a variable in the definition of a factor. Using this rule, 20 items loaded on the factor *Ambition*, 16 on the factor *Teamwork*, 12 on the factor *Dependability*, and 8 on the factor *Self-Control*. These four factors accounted for 55.53% of total variance.

The factor *Teamwork* represents those items of OWEI on which a higher score may indicate that a person is more comfortable in a team environment than those with lower scores. The factor *Dependability* represents those items of OWEI where a higher score may indicate that a person is more dependable in the workplace than a person with a lower score. The factor *Ambition* represents those items of OWEI on which a higher score may indicate a more ambitious person than one who has a lower score. The factor *Self-Control* represents those items of OWEI where a higher score may indicate a person's greater self-control capability than a person having a lower score. These variables and their values were used in the multiple regression analysis.

In this study, 205 supervisors' responses on information employee work attitudes and 146 supervisors' responses on noninformation employee work attitudes were used. The sizes of the samples were found to be more than adequate according to a prior power analysis conducted by Azam (2002) with a target power of 0.8 and four independent variables (age, gender, level of education, and length of employment). In that analysis, a sample size of 112 was found to be adequate to conduct a multiple regression analysis.

The four factors (*Teamwork*, *Dependability*, *Ambition*, and *Self-Control*) obtained by Brauchle & Azam (2003) through a principal component factor analysis based on combined employee and supervisor responses on the OWEI were used as dependent variables. The demographic factors were gender (two levels: male and female), age (five levels; 19 or under, 20-26, 27-35, 36-55, over 55 years), level of education (five levels: less than high school diploma, high school degree or GED, two years of college or associate's degree, a bachelor's degree, some graduate work), and length of full-time employment (three levels: less than two years, two to eight years, more than eight years). These were used as independent or predictor variables. The levels of the independent categorical variables were coded as binary coded placeholder variables with an acceptable value of 0 or 1. For example, if a respondent indicated 27-35 years under demographic age, then the level 27-35 years was coded to 1 and the other four levels were coded to 0.

For supervisor responses (n = 205) on information employees, transformed (square root transformation) scores were used. The unacceptable negative skewness was converted to positive skewness by subtracting each value from the largest score in that distribution + 1. For example, if the value of a particular score was 50 and the largest score in the distribution 60, then the modified score was (60+1) - 50 = 11. These positively skewed distributions were then subjected to square root transformations as suggested by Tabachnick & Fidell (1983). With transformed scores and outliers not removed, both skewness and kurtosis were found to be within acceptable limits; and each of the four dependent variable distributions passed the Kolmogorov-Smirnov test of normality.

For supervisor responses (n = 146) on noninformation employees, untransformed scores were used. With untransformed scores and outliers not removed, both skewness and kurtosis were found to be within acceptable limits. Each of the four dependent variable distributions passed the normality test.

A fixed-effect regression analysis model with a random sampling plan (numbers of participants in different levels of an independent variable were not same) was used for data analysis. Sets of independent variables were entered in terms of causal priority in an order such that no variable was likely to be causally affected by one that appears after it. The order of assumed causal priority was gender, level of education, age, and years of full-time work experience. Using this order, level of education should not affect gender; age should not affect level of education (e.g., being older is not necessarily associated with having a higher level of education; but having more education does require the expenditure of time, which would make the employee older); and years of full-time work experience should not affect age.

The regression analysis was conducted to predict the work attitudes measured by each of the four factors (i.e., *Ambition*, *Teamwork*, *Dependability*, and *Self-Control*) from the variables gender, level of education over and above gender, age over and above gender and level of education, and years of full-time work experience over and above gender, level of education, and age.

Results

Cohen and Cohen (1983) suggested a formula to calculate effect size in hierarchical regression. The formula is as follows.

$f^2 = R^2_{Y.AB} - R^2_{Y.A} / 1 - R^2_{Y.AB}$

where

f^2 = effect size

$R^2_{Y.A}$ = Y variance accounted for by variables A

$R^2_{Y.AB}$ = Y variance accounted for by variables A and B.

The numerator of the above formula represents the increment in Y variance when a set of variables B is added to a set of variables A (R^2-Change). The denominator represents the Y variation accounted for by neither A nor B and designated by Cohen and Cohen (1983) as Model I error. Here Y represents dependent variable, and A, B represents sets of independent variables. R^2s used in this analysis were not corrected for shrinkage.

Several significant F changes for different combinations of independent variables and the four dependent variables with supervisor responses on information and noninformation employee work attitudes were obtained. Table 1 indicates the statistically significant relationships obtained between the demographic variables of gender, level of education, age, and length of full-time employment and the four factors of the OWEI, *Ambition*, *Teamwork*, *Dependability*, and *Self-Control*. As can be seen in Table 1, significant relationships occurred among three of the demographic variables: gender, level of education, and length of full-time employment. Length of full-time employment was the only variable for which significant relationships occurred across all of the OWEI factors, and this occurred only for information employees. All but one of the significant relationships occurred between OWEI factors and information employees. The only significant relationship found for noninformation employees was between the OWEI factor *Self-Control* and the demographic variable length of full-time employment.

Table 1

Statistically Significant Relationship Obtained Between Demographic Variables and OWEI Factors

	OWEI factors			
Demographic variables	Ambition	Teamwork	Dependability	Self-Control
Gender				
Information	p<0.046			
Noninformation			p<0.033	
Education				
Information				
Noninformation				
Age				
Information				
Noninformation				
Employment				
Information	p<0.010	p<0.030	p<0.014	p<0.039
Noninformation			p<0.026	

On a more detailed level, the statistically significant relationships between demographic

variables and OWEI factors were as follows.

1. *Ambition* and level of education of information employees (significant at $p < 0.046$; R^2-Change = 0.047; effect size = 0.0494)
2. *Ambition* and length of full-time employment of information employees (significant at $p < 0.010$; R^2-Change = 0.043; effect size = 0.049)
3. *Dependability* and length of full-time employment of information employees (significant at $p < 0.014$; R^2-Change = 0.040; effect size = 0.0451)
4. *Self-Control* and level of education of information employees (significant at $p < 0.033$; R^2-Change = 0.051; effect size = 0.0537)
5. *Self-Control* and length of full-time employment of information employees (significant at $p < 0.039$; R^2-Change = 0.031; effect-size = 0.0343)
6. *Teamwork* and length of full-time employment of noninformation employees (significant at $p < 0.030$; R^2-Change = 0.047; effect size = 0.0539)
7. *Dependability* and length of full-time employment of noninformation employees (significant at $p < 0.026$; R^2-Change = 0.047; effect size = 0.0552)

Bivariate and Partial Correlations

For information employees, a positive sign before a bivariate or partial correlation indicates a negative relationship; and a negative sign correspondingly indicates a positive relationship. This was an effect of converting the negatively skewed distributions to positively skewed distributions before making square root transformations. Therefore, correlations in Tables 2-4 are negative correlations, even though they are reported as positive.

Table 2 presents statistically significant bivariate and partial correlations between level of education, length of full-time employment, and the work attitude measure (factor) *Ambition*. This table indicates that information employees with an associate's degree may be more ambitious than employees having any other level of education. Similarly, information employees with less than eight years of fulltime employment may be less ambitious than those with eight or more years of full-time employment.

Table 3 presents statistically significant bivariate and partial correlations between length of full-time employment and the work attitude measure *Dependability*. It points out that information employees with less than eight years of full-time employment may be less dependable than those with eight or more years of full-time employment.

Table 4 presents statistically significant bivariate and partial correlations between level of education, length of full-time employment, and the work attitude measure *Self-Control*. This table suggests that information employees with some graduate coursework may be less able to demonstrate the positive work attitude attribute of self-control in the workplace than employees having other levels of education. Similarly, information employees with less than eight years of full-time employment may be less likely to show the positive work attitude attribute of self-control in the workplace than those with eight or more years of full-time employment.

Table 2

Significant Bivariate and Partial Correlations of Work Attitude Measure Ambition and Levels of Predictor Variables (Supervisor Responses on Information Employees) (N = 205)

	Correlation	
Level of predictor variables	Bivariate	Partial

Associate degree	-0.182	-0.163
Less than two years of employment	0.151	0.195
2-8 years of employment	0.130	0.162

Table 3

Significant Bivariate and Partial Correlations of Work Measure Dependability and Levels of Predictor Variables (Supervisor Responses on Information Employees) (N = 205)

	Correlation	
Level of predictor variables	Bivariate	Partial
Less than 2 years of employment	0.131	0.178
2-8 years of employment	0.143	0.167

Table 4

Significant Bivariate and Partial Correlations of Work Attitude Measure Self- Control and Levels of Predictor Variables (Supervisor Responses on Information Employees) (N = 205)

	Correlation	
Level of predictor variables	Bivariate	Partial
Graduate work	0.169	0.151
Less than 2 years of employment	0.094	0.150
2-8 years of employment	0.117	0.152

For noninformation employees, the positive or negative sign before a bivariate or partial correlation has the usual meaning, i.e., a positive or negative relationship, respectively.

Table 5 presents statistically significant bivariate and partial correlations between a level of length of full-time employment and the work attitude measure *Teamwork*. This table indicates that noninformation employees with less than two years of full-time employment may be less likely to be successful in a team environment than employees with two or more years of full-time employment.

Table 5

Significant Bivariate and Partial Correlations of Work Attitude Measure Teamwork and Levels of Predictor Variables (Supervisor Responses on Non-Information Employees) (N = 146)

	Correlation	
Level of predictor variables	Bivariate	Partial
Less than 2 years of employment	-0.173	-0.212

Table 6 presents statistically significant bivariate and partial correlations between length of full-time employment and the work attitude measure *Dependability*, suggesting that noninformation employees with less than two years of full-time employment may be less dependable than employees with two or more years of full-time employment.

Table 6

Significant Bivariate and Partial Correlations of Work Attitude Measure Dependability and Levels of Predictor Variables (Supervisor Responses on Non-Information Employees) (N = 146)

	Correlation	
Level of predictor variables	Bivariate	Partial
Less than 2 years of employment	-0.209	-0.223

Discussion

A statistically significant positive relationship was obtained between attainment of an associate degree and the work attitude measure *Ambition* for information employees. Here, employees with an associate's degree appeared to be more eager to climb the ladder of success than information employees with any other level of education. Those employees with an associate's degree have completed a mid-level educational degree. In an industrial environment, the bachelor's degree may be the baseline for responsible higher supervisory positions, except for a few departments such as research and development, where higher degrees such as the master's degree or the doctorate are sought. Just one step behind the bachelor's degree, it is likely that an employee with an associate's degree will have a better chance to advance than those who have not attained this degree. Therefore, it is not surprising that these employees are more ambitious than others. With many more educational hurdles to overcome, employees with less than an associate's degree are not likely to be as ambitious.

Employees with a longer period of continued full-time employment may find themselves in a better position to grow in the job and to obtain increasingly responsible positions. One implication of continued full-time employment is that the company continues to be satisfied with the employee's performance. This is reflected in the statistically significant negative relationship between less than eight years of full-time employment and the work attitude measure Ambition, implying that an employee's ambition to attain a more responsible position increases with the length of full-time employment in the organization. It may also be that employees with eight or more years of full-time employment have mastered one or more jobs and may be ready for increased levels of responsibility.

A statistically significant negative relationship between workers with less than eight years of full-time employment and the work attitude measure *Dependability* was observed for information employees. Information employees with eight or more years of full-time employment were found to be more dependable than information employees with less than eight years of full-time employment. This finding seems logical. A longer period of continued employment means more experience and more exposure to that particular employment environment. Individuals with a longer period of full-time employment may develop more highly the characteristic of dependability. On the other hand, it may be that employees who were less dependable did not last very long and were released before they had been on the job very long.

For information employees, a statistically significant negative relationship occurred for those who had some graduate coursework with respect to the work attitude measure *Self-Control*. This implies that information employees who completed some graduate coursework are less able to exhibit appropriate emotional work attitude attributes than information employees with other educational qualifications. Employees who completed some graduate coursework may find themselves in a frustrating situation when they must work with people having less educational background. In such a situation, frustration might be a reason for their poor showing in the work attitude measure of *Self-Control* or they may have little patience

with other employees who did not do graduate work but are above them in the managerial chain of command.

There was a statistically significant negative relationship between the work attitude measure *Self-Control* for information employees and those who had less than eight years of full-time employment. Information employees with eight or more years of full-time employment seem to be more capable of handling emotional situations in the workplace than employees with less than eight years of full-time employment. As in the case of *Dependability*, it is not clear whether long-time employment renders employees better able to exercise self-control or whether those not capable of exercising self-control are released before they have the opportunity to become long-term employees.

A statistically significant negative relationship was obtained between the category of less than two years of full-time employment and the work attitude measure *Teamwork* for noninformation employees. Noninformation employees with two or more years of full-time employment are more likely to be successful in working with teams than noninformation employees with less than two years of full-time employment. This is an important finding. Less than two years of experience means that these employees may be rather fresh from general or career and technical schools or from the labor market and do not have much experience working on the job with other people. A poor score on *Teamwork* suggests that schools may not have done a good job of teaching work attitude attributes related to *Teamwork*.

A statistically significant negative relationship was obtained between the category less than two years of full-time employment and the work attitude measure *Dependability* for noninformation employees. Noninformation employees with two or more years of full-time employment are more dependable than noninformation employees with less than two years of full-time employment. This seems logical because more experienced persons are usually more dependable than those with less experience, and those who are not dependable are quietly released.

In this study, significant bivariate correlations varied from 0.094 to 0.209 (ignoring sign); and significant partial correlations varied from 0.150 to 0.223 (ignoring sign). Even though these correlation values seem small, they are not surprising. In behavioral and social sciences, correlations of any kind seldom approach 0.5 (Cohen & Cohen, 1983).

Several earlier studies found women better than men in self-perceived work attitudes (Petty & Hill, 1994; Hill, 1996, 1997; Hill & Rojewski, 1999; Hall, 1990, 1991; Furnham & Muhiudeen, 1984; and Wollack, et al., 1971). This study did not find any relationship between gender and employee (either information or noninformation) work attitudes. This suggests that from the employers' perspective, the women employees that were studied seemed not to have an edge over their male counterparts on any of the work attitude measures (*Ambition*, *Teamwork*, *Dependability*, and *Self-Control*). This study supports the findings of Tang's (1989) study in which no relationship between gender and work ethic was found.

According to Cohen and Cohen (1983), statistical significance and effect size are two logically different features, although they are not unrelated. Statistical significance tells whether the effect that the research study tries to discover is statistically significant or not. On the other hand, effect size describes the magnitude of that effect. For hierarchical multiple regression analysis, the effect size is a function of R^2, R^2-Change (Cohen & Cohen, 1983). They suggested 0.02 as a small effect, 0.15 as a medium effect, and 0.35 as a large effect for behavioral studies in which hierarchical multiple regression is used. In this study, effect sizes varied from 0.0343 to 0.0552. These fall into the category of small effect size, a finding that concurs with the small to medium effect sizes reported by Hill (1997).

Conclusion

It may be thought that such small effect sizes call into question the practical significance of the findings reported herein. On the other hand, the literature strongly argues that employees are fired or released because of poor work attitudes, values, and habits far more often than for other causes, even the lack of technical skills. To the extent this is true, and to the extent that the OWEI is a valid and reliable measure of the work ethic characteristics of *Ambition*, *Dependability*, *Teamwork*, and *Self-Control*, continued assessment of the existence of these work attitudes and habits in the work force will yield benchmarks to measure the strength of those characteristics, the workplace situations which seem to foster them, and the extent to which they can be taught or nurtured. It seems important that these characteristics in information employees continue to be studied because information employees comprise such a large portion of the labor force and because their success will, to a significant extent, affect the strength of the U.S. economy.

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Brauchle is Professor in the Department of Technology at Illinois State University in Normal, Illinois. Brauchle can be reached at pebrauc@ilstu.edu. Azam can be reached at sazam@verizon.net.

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