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Current Editor:

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Summer 2002

Volume 39, Number 4

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Development of an Instrument to Assess Work Ethics

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According to the literature, affective work competencies and personal social competencies are but two of the terminologies among the plethora of captions employed to describe the set of behaviors commonly referred to as work ethics. The commonality linking these various captions is that all terminologies relate to the concepts of individual responsibility, selfmanagement, self-

esteem, integrity, and sociability in varying degrees. Additionally, the presence or absence of these behaviors tends to correlate directly with the ability of an individual to enter the workforce. [Brauchle and Petty \(1983\)](#) explained,

One important aspect of an individual's employability is his or her possession of certain work-related skills which are primarily neither cognitive nor psychomotor in nature but seem to be comprised mainly of affective factors. These skills or competencies have been differently labeled by various researchers...However, they appear to comprise a loosely knit set of generic, transferable non-technical competencies (Taft & Suzuki, 1980) which in our culture are considered necessary for long term survival in the world of work.

In 1973, the Department of Health, Education, and Welfare published a task force report entitled *Work in America*. A significant finding of the report was that American workers, at all levels, were dissatisfied with the quality of their working lives. Additionally, the supposition that the American work ethic was declining was presented ([Lipset, 1990](#)). During the subsequent 15 years, this proposed decline of the American work ethic provided impetus for both empirical research and uninformed speculation. [Stanton \(1983\)](#) revealed that American business and industry expressed concern over worker's declining work performance, declining productivity, and declining quality of outputs. [Miller \(1985\)](#) declared the American work ethic "missing and presumed dead" (p. 92). Conversely, [Lipset \(1990\)](#) reported that "this conclusion is simply not sustained by the available evidence" (p. 63). As [Hill \(1992\)](#) developed the topic for his work, *The Work Ethic as Determined by Occupation, Education, Age, Gender, Work Experience, and Empowerment*, he cited contradictory results produced by six authors and stated "to draw conclusions about the true status of the work ethic was difficult considering the inconsistencies in the literature" (p. 4). Despite disparate findings about work ethic or, more importantly, the lack of an appropriate work ethic, the issue of work ethic continues to emerge as a principal source of concern for both business and academe.

National concerns regarding the diminishing work ethic are mirrored in discussions with Georgia business and industry leaders. According to James Bridges, President of Valdosta Technical Institute, a common theme arising among business advisory committees of Georgia technical institutes, Georgia business communities, and Georgia technical institute administrators is that prospective employees lack a suitable work ethic (J. Bridges, personal communication, April 26, 1996). Further, a lack of an intrinsic value set governing appropriate workplace behavior thwarts continued long-term employability, even though the applicant may possess excellent ability and job skills. This incongruity between possession of adequate skill levels and appropriate work ethic values has increasingly become an area of concern for the Georgia business communities and for Georgia technical institutes (focus group, personal communication, November 13, 1996). It is noteworthy that these comments parallel segments of the literature and reflect contemporary conventional wisdom.

In response to this alleged disparity between skill levels and appropriate work ethic values, each of the 33 technical institutes within the [Georgia Department of Technical and Adult Education \(GDTAE\)](#) system has incorporated the concept of work ethics into their curriculum. The eight core components of work ethic values, as outlined in the department's policy, include: (a) attendance and punctuality, (b) integrity and honesty, (c) productivity, (d) cooperativeness and teamwork, (e) responsiveness to supervision, (f) adherence to policies, (g) proper use of tools and resources, and (h) observance of safety provisions ([GDTAE, 1991](#)). As an integral facet of the work ethic curriculum, students receive work ethic grades reported in the same manner as other course grades, and these grades are recorded on the students' transcripts.

Additionally, each institute may augment these core values by expanding the value set to reflect the unique economies of its region and/or the specific focus of the institute's programs. These researchers thought it noteworthy to recognize that the personal

philosophies and value sets of institutional leadership substantially impacted such augmentations. Thus, when the work ethic curricula were modified, they tended to be reflections of the institute presidents.

Not operationalized in the *GDTAE (1991) Work Ethics Program* is a means to determine the work ethic value set possessed by students enrolled in institute programs (*GDTAE, 1991*). Currently, no measurement instrument specifically grounded in the GDTAE work ethics dimensions exists. Because no measurement instrument exists, Georgia technical educators are unable to measure the effectiveness of the work ethics program, at least the effectiveness of the program as viewed by students' reported work ethics.

Description of the Study

The purpose of this study was to develop an instrument that accurately and succinctly measures the eight facets of the *GDTAE Work Ethics Program*. This work builds extensively upon the work of *Boatwright and Slate (2000)*.

Existing Measurement Instruments

Two distinct, divergent research streams have emerged from the inspection of work ethics. Researchers have tended to focus their efforts toward specific processes emanating from the whole of work ethics such as Leisure Ethic (*Buchholz, 1978*), Career Salience (*Almquist & Angrist, 1971; Greenhaus, 1971*), Job Attachment (*Koch & Steers, 1978*), or upon global constructs such as measuring work values (*Steffle, 1959; Super, 1962*), occupational values (*Kilpatrick, Cummings, & Jennings, 1964*), and Protestant Work Ethic endorsement (*Blood, 1969; Mirels & Garrett, 1971*). *Morrow (1983)* stated that although many instruments exist, these instruments are insufficiently distinct from one another.

Though myriad instruments exist by which work ethics and various work ethic dimensions can be assessed, no one instrument was found to be suitable for purposes of our study. That is, the *GDTAE (1991) Work Ethics Program* incorporated into the technical education curriculum in the state of Georgia can only be adequately evaluated by an instrument in which each work ethic component of the curriculum is assessed. Through this review of literature we identified four measurement instruments that most closely paralleled the focus of this work. These measurement instruments were the *Survey of Work Values (Wollack, Goodale, Wijting, & Smith, 1971)*, *The Protestant Ethic Scale (Blood, 1969)*, *The Protestant Ethic Scale (Mirels & Garrett, 1971)*, and the *Occupational Work Ethic Inventory (Petty, 1991)*. Each will be examined separately.

The first instrument, the *Survey of Work Values (Wollack et al., 1971)*, was designed to reflect an index of a person's general attitude toward work. Prior to Wollack and colleagues' efforts, researchers had focused on developing scales that measured work and occupational values. A problem with these measurements was that even though the instruments were psychometrically well developed, "they seemed to be extremely global" (*Wollack et al., 1971, p. 331*). An important difference in the *Survey of Work Values* was that it was limited to the secularized Protestant work ethic. Moreover, the primary emphasis was on areas of values closely linked with the construct of the Protestant work ethic.

The second instrument, *The Protestant Ethic Scale*, was developed by *Milton Blood (1969)*. In this instrument, Blood's focus was on measuring individual differences in work values. He believed that individuals who ascribed to Protestant ethic ideals would have greater job satisfaction than those individuals who did not so ascribe. Reported by Blood was that job satisfaction was directly related with Protestant ethic agreement. Psychometric characteristics of the instrument, reliability and validity coefficients were not

reported in the article; however, [Furnham et al. \(1993\)](#) reported that the Spearman-Brown reliability coefficient for this instrument was .70. In addition, Furnham and colleagues stated that Blood's instrument had both concurrent and predictive validity.

The third instrument, also called *The Protestant Ethic Scale*, was developed by [Mirels and Garrett \(1971\)](#). Their instrument became very popular, as evidenced by its use in 39 published psychological studies in which the Protestant work ethic was the focus ([Furnham et al., 1993](#)). An explanation for its wide usage in the literature was that examining the Protestant work ethic was only one of a handful of topics that bridged nearly all social science areas.

In [Mirels and Garrett's work \(1971\)](#), the Protestant ethic was viewed as a dispositional variable. The psychological meaning of the Protestant ethic was viewed in terms of occupational interests and relationships with other personality variables. Initially, Mirels and Garrett focused on developing a psychometrically sound measure of the extent to which respondents endorsed Protestant ethic ideology. In their instrument Mirels and Garrett had 19 questions scaled on a six-point Likert-type format with no neutral position. [Furnham et al. \(1993\)](#) reported reliability coefficients for the Mirels and Garrett instrument as follows: (a) Spearman-Brown reliability, .67, (b) Kuder-Richardson reliability, .79, and (c) Cronbach's alpha, .67. In addition, Furnham and colleagues indicated that the *Protestant Ethic Scale* had both concurrent and predictive validity.

The fourth instrument, the *Occupational Work Ethic Inventory*, was developed by [Gregory C. Petty \(1991\)](#). This instrument was comprised of 50 one-word descriptors relating to work ethic, value of work, and work competencies to provide a succinct, accurate measure of the vocational aspect of the work ethic. Items were grouped by the researcher into four factors: Dependable, Ambitious, Considerate, and Cooperative. Studies in which this instrument have been used have reported coefficient alphas ranging from .90 ([Hatcher, 1995a](#)) to .95 ([Hill, 1992](#)). Such reliabilities are more than sufficiently high for research and other uses. Researchers who have used Petty's measure have tended to emphasize identifying key themes that characterize the modern occupational work ethic. In one research study conducted by [Hill and Petty \(1995\)](#), particularly relevant comments to this study were made. The authors stated, "The elements of work ethic that are of greatest significance in the preparation of people for work are the attitudes and behaviors ascribed to work ethic rather than a sectarian belief system that inculcates these characteristics" ([Hill & Petty, 1995](#), p. 60).

GDTAE Work Ethics Program

The [GDTAE's Work Ethics Program \(1991\)](#) was established as a result of the pioneering work of James Bridges, President of Valdosta Technical Institute. Mr. Bridges' foray into the field of work ethics stemmed from his interaction with the Valdosta-Lowndes County, Georgia business community. Based upon input from this business community, Mr. Bridges and the faculty of Valdosta Technical Institute designed a program to evaluate and monitor students' work-related behaviors. Institutes located in Griffin, Georgia; Moultrie, Georgia; Swainsboro, Georgia; and Thomasville, Georgia quickly followed suit. Immediate benefits generated by the initial plan were delineated in the "History of Georgia's Work Ethics Program":

Instructors gain more effective control of their classes. Students can be praised regularly for good traits, while poor habits can be monitored and modified. Instructors feel they can positively affect students' work ethics. In addition, we can provide employers with an opportunity to evaluate a prospective employee's work habits by seeing the result of a consistently measured work ethics grade. ([GDTAE, 1991](#), p. 7)

Mr. Don Speir, President of Swainsboro Technical Institute, aptly summarized program impact by explaining that improved

student work ethics tended to correlate positively with improved academic performance over the short run. Further, work habits positively modified through the educational process generated strong foundations upon which careers might be built (GDTAE, 1991).

Based upon the successes experienced by the institutes in Valdosta, Griffin, Moultrie, Swainsboro, and Thomasville, Georgia, in 1989 Dr. Kenneth H. Breeden, Commissioner, GDTAE, directed that a pilot project be conducted in 20 state institutes to determine the feasibility of implementing this program in all GDTAE institutes. The Work Ethics Program concept was adopted for statewide implementation in September, 1991 (GDTAE, 1991). Current program guidelines require that instructors monitor students in Georgia's technical institutes on eight dimensions of the GDTAE work ethic value set (GDTAE, 1991). No pre- or post-test exists to measure program impact upon the students' value sets.

Investigation of the GDTAE Work Ethic

A pilot study, Work Ethic Measurement of Vocational Students (Boatwright & Slate, 2000), was conducted and forms the basis for this work. In the pilot study, mixed methodologies were utilized. Qualitative data were obtained via a content analysis of GDTAE departmental *Work Ethics Program* documentation and technical institute program documentation to identify program focus and work ethic item descriptors. Focus groups were conducted with members of Valdosta Technical Institute Business Advisory Committees to discern program relevancy, currency, and accuracy (focus groups, personal communication, November 13, 1996). A needs assessment instrument was designed to elicit technical institute faculty perceptions, likes, dislikes, and suggestions for improvement regarding the *Work Ethics Program* and was administered to a faculty sample ($n = 44$) from participating institutes. Lastly, personal interviews were conducted with three institute presidents to assimilate institute managerial perceptions of the *Work Ethics Program* (J. Bridges, personal communication, April 26, 1996, November 6, 1996; C. DeMott, personal communication, November 22, 1996; M. Moye, personal communication, December 2, 1996). Qualitative data obtained through the above-noted methods were employed to develop a 50- item questionnaire (see Appendix) designed to evoke participant's value perceptions of the eight dimensions of the *GDTAE Work Ethics Program* (1991).

Methods and Procedures

Population and Sample

The focus of this study was on two populations: (1) GDTAE institutional presidents, and (2) GDTAE students enrolled in degree or diploma courses of study at participating institutes. The GDTAE, through its 33 regionally dispersed technical institutes, is charged with the responsibility for the provision of postsecondary technical education and job skills transfer for the citizens of the State of Georgia. Program delivery is accomplished through a variety of associate degree and diploma programs offered through the technical institutes. Additionally, these institutes provide adult basic education programs, continuing education programs, economic development programs, and customized business and industry training programs. All 33 institutes were invited to participate in this study. Invitees were initially asked to review a proposed instrument item pool for item appropriateness and clarity. Of the 17 presidents who expressed specific interest in the study, 16 presidents responded affirmatively to participate personally or via designee, with one president offering to serve as an alternate participant.

Georgia technical institute enrollment figures for fiscal year 1998 included 44,330 full-time students and 39,377 part-time students ($n = 83,707$) enrolled in all courses of study (GDTAE, 1998). The student population for this study included all students

enrolled in core English and math courses at participating institutes within the GDTAE system during the first quarter after entry was gained. A purposive sample (Gay, 1996) consisting primarily of technical institute students enrolled in core English and math courses was extracted from this population and surveyed in this work. Rationale for the selection of this group was that technical institute students enrolled in associate degree or diploma programs were required to take one or more core English and math courses and generally did so within the first two quarters of enrollment. Students enrolled in English and math courses early in their programs of study should have less exposure to the work ethic curriculum than students more advanced in their programs of study; hence, program content sensitization bias would be minimized.

Development of the Instrument

A two-part questionnaire was designed to address the research questions of this study. Questionnaire items included demographic questions relating to gender, age, ethnicity, and highest educational level, a series of short work ethic descriptors, and a series of statements relating to specific work ethic scenarios. In part one, work ethic descriptors were designed to elicit individual perceptions regarding the relative degree of importance placed upon the item by the participant. A five-point Likert-type scale ranging from "none" to "a great deal" was employed to record participant responses. In part two, statements relating to conditions requiring work ethic value judgments were designed to elicit the degree to which the participant supported the considered work ethic premise. A fivepoint Likert-type scale ranging from "strongly disagree" to "strongly agree" and incorporating a neutral position was employed to collect participant responses.

Pilot-test items exhibiting a low-item correlation and items not logically correlating with GDTAE work ethic dimensions were subsequently dropped from the pilot test instrument item pool. Employing selected items retained from the pilot test instrument, based upon their loadings, as its base, a new pool of questionnaire items was generated. Replacement items were augmented to generate a total of seven items for each work ethic dimension identified in the *Work Ethics Program* (GDTAE, 1991).

Survey Instrument Composition

To assess respondent perceptions concerning desirable work ethic characteristics, a 61-item questionnaire consisting of five demographic questions, addressing four demographic characteristics, and 56 work-ethicrelated descriptors and statements was constructed from the instrument item pool. Questionnaire construction employed a Table of Random Digits (Haber & Runyon, 1969) to disperse randomly instrument item pool components. Following this random dispersal, questionnaire components were sequentially numbered maintaining the integrity of components by item type. Questionnaire format employed an identical set of questions in an identical standard order. This structured format was employed to reduce test administrator or researcher bias and ensured that all subjects were asked identical questions (Mitchell & Jolley, 1996).

Section one of the questionnaire was designed to collect information regarding the sample's demographics. Mitchell and Jolley (1996) explained that initial placement of demographic questions tended to reassure respondents and generated more frank responses from remaining survey items. Demographic questions relative to gender, age range, ethnicity, and highest educational level attained were included in Section One and were scaled upon intervals paralleling GDTAE fiscal year reporting. Rationale for the inclusion of these questions, scaled in this manner, was that results would provide a gauge of sample representativeness. The demographic characteristic Age Range was scaled in five-year intervals to parallel GDTAE reporting requirements that ranged from "Age 16" to "Over Age 40." However, Age Range for this study was expanded from "Age 16" to "Over Age 40" to "Age 16" to "Over Age 60."

Section Two of the instrument was comprised of one-word and shortphrase work ethic descriptors. This section was designed to assess the relative degree of importance placed upon the specific descriptor by the respondent. Participants were asked to rate their perceptions and degree of endorsement of the identified work ethic characteristics on a five-point, Likert-type format. This format was chosen to provide respondents freedom of choice. Five choices were selected for these one-word and short-phrase descriptors. These choices were (a) Almost None, (b) Very Little, (c) Some, (d) Quite a Bit, and (e) A Great Deal.

Remaining questionnaire items, delineated in Section Three, were couched within phrases depicting work scenarios requiring work ethic value judgments. Participants were offered five response choices. These choices were (a) Strongly Disagree, (b) Disagree, (c) No Opinion, (d) Agree, and (e) Strongly Agree. The neutral choice of no opinion was included to counter the fixed-alternative nature of Likert-type items and to prevent the respondents from being forced to choose an answer that did not represent their true perception (Mitchell & Jolley, 1996).

Measurement of the Validity of the Instrument

Factor analysis was employed in this exploratory research to identify latent dimensions that emerged through the data. A principal goal of this research was to generate an instrument which tapped into the eight dimensions of work ethic defined by the *GDTAE Work Ethics Program (1991)*. Factor analysis provided a mechanism by which the explanation of the entire variant set was maximized. By examining the content of the data that loaded on individual factors, the nature of the construct being measured could be inferred. Thus, results generated through the use of this technique provided a measure of the relative degree of fit between participant responses and the work ethic dimensions defined by the Work Ethics Program (*GDTAE, 1991*). A Varimax rotation was employed to force variable independence (*Tabachnick & Fidell, 1996*).

Content validity was assessed through the employment of a panel of experts comprised of technical institute presidents. These presidents were asked to review the questionnaire item pool for appropriateness, wording, and clarity; to identify unacceptable or inappropriate items; and, finally, to suggest alternate items based upon their experience and perceptions. The employment of such a review provided a measure of the degree to which instrument items represented the universe of the concept under study and contributed to the face validity of this measure.

Convergent validity implies that evidence obtained from different sources via different measurement devices provide similar results (*McDaniel & Gates, 1991*). A MANOVA was employed to determine if statistically significant differences resulted between participant responses as a function of gender, age, ethnicity, and educational level. Multivariate significance was evaluated via Pillai's criterion (*Tabachnick & Fidell, 1996*). Differences were considered statistically significant at $p < .05$ for this work. Findings were compared with published works examining work ethic attitudes and behavior to discern similarities or differences. Similar findings contributed to evidence of convergent validity.

Data Collection

Test administrators ($n = 12$) of participating institutes were mailed survey packages which contained a cover letter describing the purpose of the study, instructions regarding survey administration, 100 survey instruments, 100 Scantron answer sheets, return mailing label, and return postage. Nine hundred twenty-six usable responses were returned, out of 1200 surveys that were mailed, for a return rate of 77.17%. The margin of error for this sample size was computed to be $\pm 3.2\%$ (*Keller & Warrack, 1994*).

Factor Structure

The factor structure of the work ethic measurement instrument was examined with a two-step factor analysis. Because the instrument employed two distinct item formats, separate principal component analyses were performed on instrument Sections Two and Three. Subsequently, a Varimax rotation was conducted to identify the structure of the two sections more clearly than was possible with the principal component factor analysis. Section Two one-word and short-phrase work ethic descriptors clustered into a single unrotated factor. The unrotated factor accounted for 42.78% of the variance and all scale items exhibited statistically significant loadings of .56 or higher. [Hair, Anderson, Tatham, and Black \(1995\)](#) suggested that loadings above .50 have practical significance. Employing this criterion, all items exhibited practical significance.

Following rotation, factors were considered interpretable if they had an eigenvalue greater than 1.00 and accounted for at least 5% of the variance. A final step was performed by ascertaining the internal consistency (i.e., Cronbach's coefficient alpha) of the items identified as having statistical significance. Factors that had coefficient alphas above .80 were considered to be interpretable. Employing these criteria, the Varimax rotation yielded two interpretable factors with eigenvalues of 6.84 and 1.03, accounting for 42.78% and 6.46% of the variance respectively. The rotated Factors One and Two yielded coefficient alphas of .86 and .82. The unrotated and rotated factor loadings for Section Two items are presented in Table 2. Section Three items, work ethic scenarios, also initially clustered into one unrotated factor. This unrotated factor accounted for 21.33% of the variance. Twenty-six of 40 scale items exhibited statistically significant loadings of .40 or greater. Using the criteria suggested by [Hair et al. \(1995\)](#), 16 of 40 of the unrotated Factor One items yielded loadings of .50 or higher delineating their practical significance.

Table 1
Factor Loadings for Instrument Section Two Items

#	Instrument Item	Unrotated Factor	Factor One	Factor Two
Q6	Cooperativeness	+.664	+.455	+.488
Q7	Responsiveness to supervision	+.641	+.371	+.548
Q8	Teamwork	+.643	+.567	+.329
Q9	Trustworthiness	+.675	+.667	+.264
Q10	Integrity	+.622	+.326	+.572
Q11	Accepts constructive criticism positively	+.567	+.196	+.636
Q12	Punctuality	+.672	+.387	+.577
Q13	Attendance	+.655	+.646	+.258
Q14	Accepts work supervision positively	+.667	+.483	+.462
Q15	Honesty	+.647	+.707	+.176
Q16	Industrious	+.640	+.177	+.768
Q17	Diligence	+.678	+.245	+.748
Q18	Adherence to company policies	+.682	+.659	+.283
Q19	Positive attitude	+.680	+.651	+.290

Q20	Productivity	+ .698	+ .628	+ .342
Q21	Proper use of tools and resources	+ .621	+ .640	+ .212

Note. Items in bold text exhibit factor loadings of +.40 or greater.

Varimax rotation of Section Three items yielded two interpretable factors with eigenvalues of 8.53 and 3.22, accounting for 21.33% and 8.05% of the variance respectively. The rotated Factor Three consisted of 12 statistically significant items with loadings at the .40 level or greater. Nine items loading on Factor Three yielded loadings of .50 or greater, delineating their practical significance. The rotated Factor Four consisted of eight statistically significant items with loadings of .40 or greater. Seven of these Factor Four items generated loadings exceeding .50, delineating practical significance. Reliability analysis for these rotated factors yielded coefficient alphas of .86 and .80 for Factors Three and Four, respectively. The unrotated and rotated factor loadings for Section Three items are presented in Table 2.

Table 2
Factor Loadings for Instrument Section Three Items

#	Instrument Item	Unrotated Factor	Factor Three	Factor Four
Q22	I will compromise my opinion sometimes for the benefit of the team.	+ .200	- .000	+ .001
Q23	Proper training is the key to proper use of tools and machinery.	+ .515	+ .228	+ .161
Q24	Dependability is a subjective term and cannot be judged by others.	+ .135	- .002	+ .182
Q25	It takes less time to do the job correctly the first time than to have to do it over.	+ .282	+ .005	+ .008
Q26	If I want to take a day off occasionally for rest, relaxation, or recreation, I think it's OK to call in sick.	+ .499	+ .007	+ .589
Q27	Productivity includes the quality of the work, not just the quantity of the work.	+ .380	+ .183	+ .008
Q28	I will ignore a company policy that I think is stupid, if I won't get caught.	+ .572	+ .139	+ .654

Q29	I would overlook "shady" business practices if they were not illegal and it would put money in my pocket.	+468	+190	+703
Q30	I go to work even when I don't feel well.	+450	+120	+008
Q31	I will follow company policies and procedures even if I don't agree with them.	+453	+006	+279
Q32	If a person is late for work, it should not cause a problem for them if they are willing to stay late.	+113	-006	+167
Q33	All company policies were created for a reason.	+533	+267	+164
Q34	Good work ethics include the willingness to do the right thing.	+590	+414	+007
Q35	Improper use of tools and machinery can create an unsafe workplace.	+485	+413	-000
Q36	Good work ethics include being willing to do what I am asked to do even if I don't want to.	+532	+262	+167
Q37	Polices are like rules; they are made to be broken.	+528	+003	+561
Q38	A clean workplace insures that the workplace is safe.	+317	+159	+005
Q39	Cooperation includes doing things that I would rather not do.	+349	+164	+002
Q40	I don't concern myself with work safety rules; I know how to work safely.	+496	+121	+469
Q41	A certain amount of material is always lost in the production process; therefore, employees have no responsibility for wasted materials.	+306	+009	+339
Q42	Cooperation and teamwork sometimes require me to do more than my fair share of the work.	+374	+147	+004

Q43	I do not always follow directions if I know a better or easier way.	+.327	+.002	+.638
Q44	Cooperation and teamwork include speaking up when I think we are making a mistake.	+.558	+.542	-.008
Q45	Safety is everybody's business.	+.561	+.524	-.004
Q46	An unsafe workplace can cost me money.	+.369	+.278	-.001
Q47	I follow company policies when it suits me.	+.573	+.196	+.574
Q48	I don't concern myself with wasted materials.	+.397	+.163	+.547
Q49	When I see an unsafe condition in my work area, I report it to my supervisor immediately.	+.609	+.557	+.178
Q50	I take a lot of pride in the quality of work that I complete.	+.601	+.577	+.117
Q51	The cost to rework a defective item directly affects my paycheck.	+.112	-.001	-.005
Q52	The ability and willingness to follow directions are important to any kind of work.	+.639	+.547	+.183
Q53	If I borrow a tool, I clean it and return it as soon as I am finished with it.	+.522	+.669	+.252
Q54	If I don't understand the reason for a policy, I ask my supervisor to explain it to me.	+.478	+.661	+.168
Q55	"White lies" are acceptable if the truth would cause damage to the business.	+.488	+.137	+.399
Q56	I take a lot of pride in not missing work needlessly and being at work on time.	+.542	+.443	+.284
Q57	When I see an unsafe condition in someone else's work area, I leave it up to him or her to report it	+.446	+.167	+.240

to their supervisor.

Q58	Attention to detail is very important in any line of work.	+.553	+.605	+.129
Q59	I would not tell the truth if one of my friends would be fired because of my answer.	+.405	+.006	+.354
Q60	The cost of on-the-job accidents greatly exceeds actual medical costs.	+.258	+.220	+.002
Q61	Teamwork requires working together to achieve common goals.	+.602	+.628	+.003

Note. Items in bold text exhibit factor loadings of +.40 or greater.

Multivariate Analysis of Variance

Demographic variables of gender, age level, ethnicity, and educational level were analyzed to determine their relationship with work ethic attitudes. Initially these variables were scaled to parallel GDTAE fiscal year reporting with some modifications. Age range was expanded from the 6 categories identified by GDTAE data to 10 categories in an attempt to collect specific data from older subjects aged 41 to over 60 years. Ethnicity was collapsed from seven classifications identified in the GDTAE data into five classifications through the collapse of the GDTAE classifications of American Indian, non-resident alien, and multi-racial into one classification entitled other. This reduction was performed due to the small number of subjects identified by and reported in GDTAE fiscal year data. Subsequent analysis of the data collected in this study led to the collapse of data categories for the variables of age range and ethnicity due to the small response rate yielded for some categories

Lastly, the educational level classification, Less than 12 years, yielded a small number of respondents (*n*=16). Because the remaining three classifications represented the attainment of a high school diploma or equivalent at a minimum, respondents reporting an educational level of less than 12 years were dropped from the study. The remaining educational level classifications analyzed in this study were GED, high school diploma, and more than 12 years. Demographic classifications of the data analyzed in this study are reported in Table 3.

Table 3
Recoded Demographics of Student Sample

Demographic	Classification	Frequency	Percent
Gender	Male	252	27.2
	Female	667	72.0

Age Range	16 - 20	242	26.1
	21 - 25	261	28.2
	26 - 30	124	13.4
	31 - 40	166	17.9
	More Than 40	124	13.4
Ethnicity	Caucasian	464	50.1
	African American	350	37.8
	Other	94	10.2
Highest Educational Level Attained	GED	149	16.1
	High School	329	35.5
	More Than 12	390	42.1

A 2 (gender) x 5 (age level) x 3 (ethnicity) x 3 (educational level) between-subjects multivariate analysis of variance (MANOVA) was performed using the four factors developed through the initial factor analysis as the dependent variables simultaneously. Total responses ($n = 926$) were reduced based on missing cases as follows: gender ($n = 919$), age range ($n = 917$), ethnicity ($n = 908$), and educational level ($n = 868$).

The MANOVA yielded a main effect for gender, Pillai's Trace (4, 645) = 3.77, $p < .005$. Females exhibited higher mean scores than did males. Statistically significant interactions were yielded as a function of Gender x Age Range x Ethnicity x Educational Level, $F(44, 2592) = 1.45$, $p < .05$, Gender x Age Range x Ethnicity, $F(32, 2592) = 1.46$, $p < .05$, Gender x Age Range x Educational Level, $F(32, 2592) = 1.50$, $p < .05$, and Age Range x Educational Level, $F(32, 2592) = 1.66$, $p < .05$. The computed effect sizes of these interactions were .16, .14, .14, and .14, respectively. According to Cohen (1988), effect sizes between the range of .10 and .25 are to be interpreted as small to moderate.

To determine which mean scores were statistically different, a post-hoc analysis was performed. The Scheffé test was selected for this analysis to test all possible linear combinations of group means. Results of the post-hoc analysis revealed statistically significant differences between Caucasians and African Americans on Factor Two and Factor Four questionnaire items at the 5% level. Caucasians ($M = 34.82$) scored higher on Factor Two items than did African Americans ($M = 33.72$). Similarly, Caucasians ($M = 31.33$) scored higher on Factor Four items than did African Americans ($M = 30.16$).

Statistically significant differences were also yielded as a function of age level between the group 16-20 and other age groups on Factors Two, Three, and Four. Factor Two score rankings yielded higher mean scores for age levels 31-40 ($M = 35.22$), > 40 ($M = 35.16$), 26-30 ($M = 34.86$) versus age level 16-20 ($M = 33.07$). Statistically significant differences were not yielded for age level 21-25 respondents in this comparison. Factor Three scores generated statistically significant mean differences between the age level 31-40 ($M = 50.58$) and the age level 16-20 ($M = 48.65$) only. Factor Four item responses generated statistically significant mean

differences among the age levels > 40 ($M = 32.28$), 31-40 ($M = 31.86$), and 26-30 ($M = 31.57$) and age level 16-20 respondents ($M = 29.50$).

Next, separate factor analyses were conducted for males and for females to ascertain whether differences were present in the factor structure of the work ethic instrument. With the exception of three small differences in the loadings yielded for questionnaire items 12, 14, and 43, factor components loaded in an identical pattern for the sample taken as a whole and for the sample analyzed separately by gender. Because the loadings for the above-mentioned items were statistically significant in each case of change, it was concluded that the structure of this instrument was the same for males and females.

Comparison of Findings

Previous research yielded mixed results when work ethic values were examined as a function of gender. Some researchers reported no evidence of a gender effect (Beit-Hallahmi, 1979; Buchholz, 1978; Gonsalves & Bernard, 1985; Goodale, 1973; Ma, 1986; MacDonald, 1972; Mirels & Garrett, 1971; Tang, 1989; Tang & Tzeng, 1992; Wayne, 1989). Other researchers reported that work ethic varied by gender (Ali & Azim, 1995; Boatwright & Slate, 2000; Wentworth & Chell, 1997), with males exhibiting stronger work ethic values than females. Still other researchers found gender effects with females demonstrating stronger work ethic values than males (Allender, 1993; Baguma & Furnham, 1993; Furnham & Muhiudeen, 1984; Furnham & Rajamanickam, 1992; Hill, 1992, 1996, 1997; Petty & Hill, 1995). Paralleling the results of this third grouping, a gender effect was found in this study with females yielding higher scores than males. This finding was indicative that females, in this sample, possessed stronger work ethic values than males. These results are similar to the ones reported in our pilot study, using a different sample of students at different institutes in Georgia (Boatwright & Slate, 2000).

Work ethic comparisons relative to age levels of participants also produced mixed results. Aldag and Brief (1975) and Goodale (1973) found positive correlations between age and strong work ethic values with older subjects reporting stronger work ethic values than younger subjects. On the other hand, Furnham and Rajamanickam (1992), Tang and Tzeng (1992), and Wentworth and Chell (1997) yielded negative correlations between age and work ethic values in that younger participants possessed stronger work ethic values than older participants. Most prevalent in the research literature, however, were studies in which no correlation was reported between work ethic values and age (Buchholz, 1978; Furnham, 1982, 1987; Hill, 1992, Ma, 1986; MacDonald, 1972; Wayne, 1989). In this research, statistically significant results were yielded between the youngest age grouping, age level 16-20, and other age groupings on three of the four factors. However, no clearly discernable pattern of positive or negative correlation was evident in that all comparisons between age levels did not yield significance and the patterns of mean scores varied by factor. Post-hoc analysis revealed that higher work ethic scores were not a function of increasing age. Thus, these findings are congruent with the majority of the research literature concerning the lack of a relationship between age and work ethic values.

Studies in which work ethics have been analyzed as a function of ethnicity are distinctly fewer in number. The more prevalent results offered are that differences are not present as a function of this characteristic (Aul, 1978; Boatwright & Slate, 2000; Buchholz, 1978; Tang & Tzeng, 1992; ul Hassan, 1968). Gonsalves and Bernard (1985) found statistically significant differences as a function of ethnicity between Asians and Caucasians, with Asians generating higher work ethic scores. No statistically significant differences were produced between Caucasians and African Americans in their study. Beit-Hallahmi's (1979) work was the single study found in which work ethic values, compared as a function of ethnicity, produced statistically significant differences between African Americans and Caucasians. In this research, statistically significant results were yielded on this comparison with Caucasians generating higher work ethic scores than African Americans.

The premise that education contributes to an individual's work ethic value set is equally unsettled. Wollack et al. (1971) and Goodale (1973) found that the educational level of subjects was positively correlated with a strong work ethic in that individuals with higher levels of education exhibited stronger work ethic values. Furnham (1982, 1987), Ma (1986), Tang and Tzeng (1992), and Wentworth and Chell (1997) found that subjects with lower levels of education exhibited stronger work ethic values; thus, education seemed to be negatively correlated with work ethic. Finally, Aldag and Brief (1975), Buchholz (1978), and MacDonald (1972) found no correlation between work ethic values and educational levels. In this research study no statistically significant results occurred as a function of educational level.

Discussion

The purpose of this study was to develop a psychometrically sound instrument in which the eight work ethic dimensions identified in the GDTAE (1991) *Work Ethics Program* were accurately and succinctly measured. The rationale for this work stemmed from the lack of an operational measurement instrument specifically grounded in the specified dimensions of the program. Because no instrument was available to the system, program effectiveness could not be quantitatively measured.

Based upon this analysis, the following conclusions were formulated. First, the content validity of items included in the researcher-developed instrument was confirmed by persons within the field who were knowledgeable of the program, its focus, and its intent. Second, the researcher-developed instrument possessed acceptable reliability for research purposes. Third, the factor structure of the researcher-developed instrument was essentially the same for males and females. Fourth, results of demographic comparisons parallel results obtained by other researchers investigating similar constructs offering some degree of convergent validity.

Recommendations for Further Research

Based upon the findings and conclusions of this work, recommendations for additional research are presented to address the following issues. First, a study of an expanded random sample of GDTAE students is needed to substantiate the results of this study. As stated previously, the purpose of this study was to develop a work ethics measurement instrument grounded in the eight dimensions of GDTAE (1991) *Work Ethics Program*. The extent to which findings regarding this instrument are generalizable to other GDTAE students is unknown at this time. Development of an instrument through which the students' views of work ethics can be evaluated cannot occur through a single test administration. Should consistent findings be present across a series of administrations, then the instrument may have credibility.

Second, as additional data are collected using the researcher-developed instrument, norms should be established. The establishment of norms will provide program administrators with information regarding the ranges and central tendencies of students' work ethic behaviors and values. Changes in work ethic curriculum may be considered in areas where students' work ethic behaviors and values are not at a desired or preferred level. Only through the use of normative data can administrators determine the efficacy of their work ethic curriculum.

Third, a study employing this instrument in a pre- and post-test design should be conducted to discern its effectiveness in evaluating student progress relative to the GDTAE (1991) *Work Ethics Program* curricula. Findings in this study were indicative of students' current levels of work ethic behavior and values. The extent to which the program curriculum influenced these areas is unknown. Students could have entered their course of study with the same level of work ethic values found in this research,

indicating that the curriculum had no effect on student behavior. Conversely, students could have entered their course of study with poor work ethic behaviors and values, indicating that the curriculum generated a positive outcome. Only through a pre- and post-design will a determination of the extent to which the program influences work ethic values be possible. As a result of this determination, program administrators may need to (a) leave the program alone since it is having the intended effect, (b) consider modifications to the program because it is generating some of the intended effects, or (c) make extensive program revisions if the program is having limited or no effect.

Fourth, studies should be conducted using the researcher-developed instrument and established work ethic measurement instruments to enhance convergent and criterion-related validity. The extent to which the work ethic instrument developed herein actually measures work ethic as agreed upon by other researchers is largely unknown. That is, although content-related validity of the instrument has been documented, the relationship of the researcher-developed instrument to other recognized work ethic measurement instruments is unknown at this time. More credibility can be assigned to the instrument reported herein once criterion-related validity has been demonstrated.

Finally, multi-dimensional studies should be conducted using the researcher-developed instrument and other psychological and sociological measures to facilitate understanding of the relationship of the work ethic to other factors within the cultural context of work. The concept of work ethics and related constructs exist within a broad theoretical framework. This single study is not sufficient to position this measurement instrument within such a theoretical framework; rather, numerous comparisons are required to establish a thorough understanding of such a complex issue. Limitations of the Study

Readers should be cautioned regarding limitations of the study. First, the extent to which findings of this study are generalizable is unknown. Because this study addressed work ethics as defined by one program and was conducted in a geographically restricted region with subjects drawn from one educational system, generalizability of demographic results to other student populations, non-student populations, and other geographic locales cannot be discerned through this work. The second limitation centers upon the comparison of this work with other work value-related scales. Because this research focused specifically upon the work ethic dimensions delineated by the **GDTAE (1991) Work Ethics Program**, it was, of necessity, more narrowly defined than some works and more broadly defined than others. A third limitation was the aspect of socially desirable responses and their impact upon study results. Lastly, because the instrument employed a Likert-type response scale and because participants responded through a single set of uniform replies, they may generate identical summed numerical scores; however, components of their overall responses may differ markedly. Thus, care must be exercised when interpreting results.

The work ethic has emerged as a critical element of the business world. The rationale for this work hinged upon the quantitative uncertainty of GDTAE's efforts to remedy a skill deficiency in program graduates. This work has provided a validated instrument that may be able to provide information relative to their program efficacy.

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Appendix

GDTAE Work Ethic Dimension and Instrument Item Pool

Work Ethic Dimension	Instrument Item
Adherence to Policies	Adherence to company policies
Adherence to Policies	If I don't understand the reason for a policy, I ask my supervisor to explain it to me.
Adherence to Policies	If I think that a company policy is stupid, I will ignore it if I won't get caught.
Adherence to Policies	I will follow company policies and procedures even if I don't agree with them.
Adherence to Policies	Policies are like rules; they are made to be broken.
Adherence to Policies	I follow company policies when it suits me.
Adherence to Policies	All company policies were created for a reason.
Attendance & Punctuality	Punctuality

Attendance & Punctuality

Attendance

Attendance & Punctuality

I take a lot of pride in not missing work needlessly and being at work on time.

Attendance & Punctuality

If a person is late for work, it should not cause a problem for them if they are willing to stay late and make up the time.

Attendance & Punctuality

Dependability is a subjective term and can not be judged by others.

Attendance & Punctuality

If I want to take a day off occasionally for rest, relaxation, or recreation, I think it's OK to call in sick.

Attendance & Punctuality

I go to work even when I don't feel well.

Cooperativeness & Teamwork

Teamwork

Cooperativeness & Teamwork

Cooperativeness

Cooperativeness & Teamwork

Cooperation and teamwork sometimes requires me to do more than my fair share of the work.

Cooperativeness & Teamwork

Cooperation includes doing things that I would rather not do.

Cooperativeness & Teamwork

Teamwork requires working together to achieve common goals.

Cooperativeness & Teamwork

Cooperation and Teamwork include speaking up when I think we are making a mistake.

Cooperativeness & Teamwork

I will compromise my opinion sometimes for the benefit of the team.

Integrity & Honesty

Trustworthiness

Integrity & Honesty

Honesty

Integrity & Honesty

Integrity

Integrity & Honesty

"White lies" are acceptable if the truth would cause damage to the business.

Integrity & Honesty

I would not tell the truth if one of my friends would be fired because of my answer.

Integrity & Honesty

Good work ethics include the willingness to do the right thing.

Integrity & Honesty

I would overlook "shady" business practices if they were not illegal and it would put money in my pocket.

Observance of Safety Provisions

I don't concern myself with work safety rules; I know how to work safely.

Observance of Safety Provisions

A clean workplace insures that the workplace is safe.

Observance of Safety Provisions

An unsafe workplace can cost me money.

Observance of Safety Provisions

When I see an unsafe condition in my work area, I report it to my supervisor immediately.

Observance of Safety Provisions

When I see an unsafe condition in someone else's work area, I leave it up to them

Observance of Safety Provisions
 Observance of Safety Provisions
 Productivity
 Productivity
 Productivity
 Productivity
 Productivity
 Productivity
 Productivity
 Proper Use of Tools & Resources
 Proper Use of Tools & Resources

 Proper Use of Tools & Resources
 Proper Use of Tools & Resources
 Proper Use of Tools & Resources
 Proper Use of Tools & Resources
 Proper Use of Tools & Resources
 Responsiveness to Supervision
 Responsiveness to Supervision
 Responsiveness to Supervision
 Responsiveness to Supervision
 Responsiveness to Supervision
 Responsiveness to Supervision
 Responsiveness to Supervision

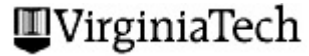
to report it to their supervisor.
 The cost of on-the-job accidents greatly exceeds actual medical costs.
 Safety is everybody's business.
Productivity
Diligence
Industrious
I take a lot of pride in the quality of work that I complete.
Attention to detail is very important in any line of work.
 It takes less time to do the job correctly the first time than to have to do it over.
 Productivity includes the quality of the work, not just the quantity of the work.
Proper use of tools and resources
 A certain amount of material is always wasted in the production process; therefore, employees have no responsibility for wasted materials.
 If I borrow a tool, I clean it and return it as soon as I am finished with it.
 I don't concern myself with wasted materials.
 Improper use of tools and machinery can create an unsafe workplace.
 The cost to rework a defective item directly affects my paycheck.
 Proper training is the key to proper use of tools and machinery.
 Accepts work supervision positively.
 Positive attitude
 Accepts constructive criticism positively
 Responsiveness to supervision
I do not always follow directions if I know a better or easier way.
 The ability and willingness to follow directions is important to any kind of work.
Good work ethics include being willing to do what I am asked to do even if I don't want to.

Note. Items in bold text were employed on the 1996 pilot-test instrument.

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