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Selecting High-Performing Information Technology Professionals

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ABSTRACT
In order to achieve competitive advantage, 21st century organizations will make substantial investments in information technology (IT). Effective human resource practices in the IT field will therefore be critical. We investigated the applicability of general mental ability and personality test scores in predicting high-performing IT professionals. Data collected from 94 information technology employees in a service industry firm were compared with supervisory ratings along four orthogonal criteria—technical proficiency, relationship management skills, adherence to documentation standards and requirements, and self-initiated professional development. Results were partially supportive of the hypotheses and provide impetus for further work investigating applications of these tests to predict programmer performance in staffing and selection processes.

Keywords: information technology, employee selection, personality, general mental ability, high-performance

The demand continues to escalate for information technology (IT) professionals who create value in project-based work, innovatively solve systems-related problems, and work under inordinate time pressures. Yet, recent evidence conservatively suggests that at least 350,000 information technology jobs remain unfilled in the United States (Maddern, 2000). Furthermore, it has been estimated to take almost nine months to fill an IT vacancy and get a new IT employee up to speed.

The shortage of IT professionals has spurred many human resource managers to make substantial market-based adjustments to compensation plans in the IT field. Even more progressive companies have introduced a variety of retention incentives, particularly for those working in certain "hot skill areas" such as web design and development, Java programming, e-commerce, multimedia, networking, and Enterprise...
Resource Planning (ERP) systems (e.g., PeopleSoft, SAP). The IT shortage has also dramatically increased the breadth and/or depth of such skill requirements.

Not surprisingly though, not all IT workers who are hired meet managers’ performance expectations, and anecdotal evidence suggests that many managers of information technology professionals find themselves spending a substantial amount of time coaching low performers. Given significant investments in the IT infrastructures and systems development required for competitive advantage in the new business reality, executives can ill afford poor performing information technology professionals. Unfortunately, typical approaches used for selecting IT employees have focused mostly on such ineffective methods as self-reported histories of IT experience or applicant responses in hurried unstructured interviews just to get someone to fill the vacancy.

Many firms have neglected the advances in selection assessment technologies, including inexpensive tests that can be administered in less than 15 minutes, can be processed readily in-house, and deliver reliable job-specific information quickly (Russell, 1999). The most commonly used commercially available test to predict programmer success is the Computer Programmer Aptitude Battery. Unfortunately, it is severely limited (Mahurin, 1992), as it has not been updated since 1964, it predicts success in programmer training courses rather than job performance, and it has adverse impact against minorities.

With escalating salaries and recruiting difficulties, the selection and retention of high-performing IT employees is critical. As such, efforts to improve the selection of information technologists must improve if we are to use our human resources wisely. Fortunately, more rigorous selection strategies and policies exist to increase “person-job” fit and “person-organization” fit for IT employees and promise highly sought-after utility. The purpose of the present study therefore was to investigate the applicability of two commonly employed human resource approaches for selecting information technology professionals—general mental ability and personality—with the goal of identifying the most high-performing individuals in this field.

A REVIEW OF THE RELEVANT LITERATURE

Whether labeled cognitive ability, general mental ability (GMA), or “g-factor,” the ability to process and analyze information has been shown to predict job performance across a wide variety of jobs (e.g., Hunter & Hunter, 1984; Ree, Earles, & Teachout, 1994). Schmidt and Hunter’s review of the literature (1998) substantiated that GMA is a consistent and universal predictor of job performance and learning. GMA influences job performance through its effects on job knowledge (Hunter, 1983; Schmidt, Hunter, & Outerbridge, 1986). Clearly, GMA is likely to predict the job performance of IT workers, who virtually epitomize the knowledge-worker trend in the present business reality. For example, superior mental ability is likely to be related to superior execution of IT tasks, such as coding, design, and problem-solving.

However, GMA is unlikely to explain variance in other elements of an IT worker’s job performance. For example, analytical ability may have little to do with a programmer’s ability to work with peers, end-users, or managers to complete software projects on time and with little rework. Instead, personality might explain these aspects of performance.
The Five-Factor Model of Personality

Researchers have examined personality-based predictors of work-related outcomes across a variety of organizations (see George, 1992; House, Shane, & Herold, 1996; and Judge, 1992 for reviews). Much of this progress can be attributed to development of one particular personality model—namely, the Five-Factor Model (FFM; Digman & Takemoto-chock, 1981; Fiske, 1949; Norman, 1963; Tuples & Christal, 1958). The FFM has been well accepted as taxonomy of personality in the field of personality psychology (DeRaad & Dodder-Winsemius, 1999; John & Srivastava, 1999; McCrae & Costa, 1999), despite some criticism (e.g., Butcher & Rouse, 1996).

The dimensions of the FFM are agreeableness, extraversion, conscientiousness, emotional stability, and openness to experience. These five characteristics have been demonstrated to be stable across a multitude of studies (e.g., Costa & McCray, 1988; Costa, McCrae & Holland, 1984; McCrae & Costa, 1987), including some with sources other than the job incumbent (Digman & Takemoto-chock, 1981; Dunn, Mount, Barrick, & Ones, 1995; McCrae & Costa, 1987). These traits may be hereditary, providing even more compelling evidence for their stability across language or ethnic groups, as well as age and gender (Costa & McCrae, 1992; Digman, 1990; Paunonen, Jackson, Trzebinski, & Forsterling, 1992).

Agreeableness taps an individual’s degree of empathy and cooperativeness in a social context. It refers to such traits as flexibility, generosity, sympathy, selflessness, cooperativeness, helpfulness, tolerance, and courtesy (Digman, 1990). Havill, Besevégis, and Mouroussaki (1998) suggested that agreeableness is the primary concept to consider in the assessment of individual differences. Mount, Barrick, and Stewart (1998), however, found that agreeableness is most relevant to job performance in situations where joint action and collaboration are needed. Indeed, work environments having a fairly high level of interpersonal interaction require tolerance, selflessness, and flexibility. Agreeable persons tend to deal with conflict cooperatively or collaboratively, maintain social affiliations, and strive for common understanding (Digman, 1990).

Extraversion refers to a person’s predisposition to be active, talkative, sociable, and assertive. As noted by John and Srivastava (1999, p. 121), extraversion reflects an “energetic approach to the social and material world” and is characterized by such traits as assertiveness, activity, positive emotionality, and sociability. Extraverted individuals often have enterprising vocational interests, numerous friendships, and social skills (McCrae & Costa, 1999).

John and Srivastava (1999) described conscientious individuals as being able to maintain socially prescribed impulse control (e.g., delaying gratification, planning, following social norms, prioritizing, and thinking before speaking). Similarly, McCrae and John (1992) described conscientiousness using such adjectives as reliable, responsible, efficient, organized, planful, and thorough. Conscientious individuals often have technical expertise, an organized support network, and long-term plans (McCrae & Costa, 1999).

Emotional stability refers to the disposition to be optimistic, calm, and well adjusted. McCrae and Costa (1999) noted that persons low in emotional stability suffer from irrational perfectionistic beliefs, self-esteem, and pessimistic attitudes. With these tendencies, they are predisposed to
require considerable emotional support from others, experience less satisfaction and more stress, doubt their abilities, and see themselves as victims (Judge, Locke, Durham, & Kluger, 1998; Hogan & Briggs, 1984).

Individuals high on openness to experience tend to be imaginative, attentive to inner feelings, and possess intellectual curiosity and independence of judgment (Heneman, Judge, & Heneman, 2000). Openness has been associated with such other dispositional traits as unconventionality, autonomy, imagination, creativity, inquisitiveness, and change acceptance (Goldberg, 1992).

Given the established dimensionality of the Five-Factors, researchers have investigated their relationships with job performance (e.g., Barrick & Mount, 1996, 1993; Stewart, 1996). Meta-analytic studies indicate that the Five-Factor Model constructs job performance across most—although not all—jobs (Barrick & Mount, 1991; Barrick et al., in press; Hurtz & Donovan, 2000; Salgado, 1997). In summary, a considerable body of work supports the predictive value of the Five-Factor Model (see Mount & Barrick, 1998), which supports its use as a measure of personality in the current work.

HYPOTHESES

Guion (1998) advocated that selection researchers use measures for prediction that are appropriate not only to the work context but also the particular performance dimensions being predicted. Given the purpose of the present study to investigate the applicability for information technology professionals of GMA and personality, job analyses were first conducted to ascertain appropriate performance criteria. Item development was based on the results of our job analyses. Specifically, we interviewed job incumbents, their managers, appropriate human resources representatives, and customers of the programmers about the job and work environment. We also reviewed the performance appraisal forms used to assess incumbent performance. The results of this process yielded four criteria to be used as criterion measures in this study: (a) technical proficiency, (b) relationship management skills, (c) adherence to documentation standards and requirements, and (d) self-initiated professional development.

Hypothesis 1

Technical proficiency reflects the degree to which the IT employee performs the core substantive tasks central to his/her job. Conscientiousness (e.g., Barrick & Mount, 1991; Mount & Barrick, 1995) and GMA (e.g., Hunter & Hunter, 1984) have been found to predict such core measures of job performance. Given the preponderance of prior evidence for using GMA and conscientiousness to predict performance across jobs, we hypothesized similar results for IT workers. In other words, workers predisposed to be reliable, responsible, efficient, planful, achievement-oriented, hardworking, organized, and thorough (i.e., high in conscientiousness) are likely to be more technically proficient than those who are not. Similarly, workers who can process information quickly, anticipate interactions of their work with other modules of code, and understand the big picture (i.e., high in GMA) are likely to be more technically proficient than those who cannot.

Hypothesis 1. GMA and conscientiousness scores are positively related to supervisory ratings of IT workers’ technical proficiency.
Hypothesis 2

The second criterion of interest was relationship management, which refers to an IT worker’s interpersonal effectiveness. Recent research has shown a strong relationship between agreeableness and interpersonal skills. For example, in a recent study to predict the performance of 79 four-person human resource work teams, the trait of agreeableness predicted interpersonal skills, at both the individual and group levels of analysis (Neuman & Wright, 1999). Similarly, in a study of 110 mid-level managers participating in a university-sponsored management development workshop, agreeableness was related to the use of an integrating, or “win-win,” style of conflict resolution (Antonioni, 1998). As such, we expected that cooperative and altruistic (i.e., agreeable) IT workers would thrive in managing relationships at work, such as managing group-based systems projects where conflicts can easily and frequently arise.

Furthermore, in Antonioni’s (1998) study, extraversion and conscientiousness were related to an open, exchange-oriented style of conflict resolution. It is not surprising that employees who are active and sociable (i.e., high in extroversion) tend to engage in integrating conflict resolutions and work well with others. Oriented toward follow-up, being organized, and having impulse control and attention to detail, conscientious workers are likely to be effective at relationship management. They are likely to be attentive to the little details that are important to others, careful in planning their words, and hesitant to speak without first thinking of the impact of their comments.

Finally, workers high in emotional stability may be more effective than those low in emotional stability at relationship management. Whereas the optimistic, calm, and well-adjusted emotionally stable workers are likely to get along with others, the pessimistic and over-sensitive emotionally unstable workers are likely to encounter problems with others.

**Hypothesis 2.** Agreeableness, extraversion, conscientiousness, and emotional stability scores are positively related to supervisory ratings of IT workers’ relationship management skills.

Hypothesis 3

The third criterion measure, adherence to documentation standards, measures the extent to which IT employees archive and record their work (e.g., document systems problems, technical processes used, programs created or revised, etc.). It is likely that technicians who are high in conscientiousness would be rated high on this criterion. Prudence is central to documenting work, and so simply stated, IT workers who are diligent, exacting, attentive to detail, and predisposed to comply with rules are expected to be rated highly on their ability to maintain documentation standards in their jobs.

**Hypothesis 3.** Conscientiousness scores are positively related supervisory ratings of IT workers’ adherence to documentation standards.

Hypothesis 4

Our fourth dimension of performance—self-initiated professional development—reflects the information technologist’s efforts to seek opportunities for professional improvement. Dispositional research relating to career development and professional improvement-seeking tendencies is scant. However, we suggest that two dimensions of the FFM may be relevant, namely openness to experience and agreeableness. IT
workers who are intellectually curious (i.e., high on openness to experience) are likely to pursue continuing education and other self-study opportunities more than others. Agreeableness reflects flexibility, generosity, selflessness, cooperativeness, helpfulness, and tolerance. The helpful and cooperative workers high in agreeableness are more likely to enhance their personal skill sets for benefit of the company and their co-workers than those low in agreeableness.

**Hypothesis 4.** Agreeableness and openness to experience scores are positively related to supervisory ratings of IT workers’ self-initiated professional development.

We graphically present the relationships predicted in our four hypotheses in Figure 1. We emphasize that we are not proposing a causal model but rather merely illustrating the predicted validity coefficients.

**METHOD**

**Subjects**

Ninety-four information technology workers employed by a service-based organization provided complete data. Of these participants, 29.1% were females, and 15.1% were minorities. They averaged 15.96 years (SD = 2.29) of formal education, and the majority (72%) worked in a mainframe environment.

**Measures**

**GMA.** The Wonderlic Personnel Test (WPT) was used to measure general GMA. Composed of three types of items—vocabulary, arithmetic reasoning, and spatial relations—the WPT is among the most commonly used measures of GMA and is considered equivalent to other known measures of GMA (Hunter, 1989). Test-retest reliabilities (across test forms) range from .82 to .94, and alternate form

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*Figure 1: Hypothesized Relationships*
reliabilities range from .73 to .95. Other measures of internal consistency (such as the KR-20) range from .88 to .94 (Wonderlic, 1992).

**Personality.** The Personal Characteristics Inventory—PCI (Barrick & Mount, 1991)—assessed the Five-Factor Model personality dimensions. Unlike other measures based on the FFM, the PCI was developed for use in personnel selection. The PCI presents 120 items—30 each for conscientiousness and extraversion, and 20 each for agreeableness, emotional stability, and openness to experience. Subjects were asked to rate each item on a three-point, Likert-type scale (from 1 = “disagree” to 3 = “agree”). Coefficient alpha reliability estimates reported in the test manual for this measure range from .82 to .87 for the five dimensions, while the test-retest reliability estimates range from .70 to .82 (Barrick & Mount, 1991). The PCI scales have also demonstrated convergent validity and divergent validity with other Five-Factor measures, such as Goldberg’s Adjective Checklist (Goldberg, 1992).

**Job Performance.** Criterion items were developed on the basis of the job analysis results, as discussed earlier, and in consultation with first-line, middle, and senior managers. Each participating IT employee was rated by his/her first-line supervisor using the following scale: (a) “weak or bottom 10%,” (b) “fair or next 20%,” (c) “good or next 40%,” (d) “very good or next 20%,” or (e) “best or top 10%.” These responses were scored as 1, 2, 3, 4, and 5, respectively. Principal components factor analysis with varimax rotation was then used to create four orthogonal criterion factors. The resulting factor scores were used to compute subsequent validity coefficients.

Fifteen items composed the first factor to measure technical proficiency (e.g., “(employee name) applies the highest levels of technical skill in completing work requirements”). Eleven items composed the second factor to tap relationship-management skills (e.g., “(employee name) develops and maintains positive client relationships”). Six items composed the third factor to measure adherence to documentation standards and requirements (e.g., “(employee name) documents system problems in an accurate and timely manner”). Lastly, three items composed the fourth factor to measure self-initiated professional development (e.g., “(employee name) pursues self-study and continuing education to maintain technical skills”).

**RESULTS**

Descriptive statistics, coefficient alpha reliability estimates, and correlations among the variables are presented in Table 1. As shown there, the scales composed of items using Likert-type response anchors met or exceeded the minimally accepted level of reliability of $\alpha = .70$ (Nunnally, 1978).

To provide rigorous tests of the hypotheses, we employed multiple regression analyses, first entering three demographic variables—age, sex, and tenure in the organization—into the equations. Consistent with our argument that personality explains variance in IT performance beyond that explained by GMA, we added GMA scores prior to conscientiousness to test the first hypothesis and then included it in Step 1 with the demographic variables to test the remaining hypotheses.

**Hypothesis 1.** As shown in Table 1, GMA ($r = .36, p < .05$), conscientiousness scores ($r = -.18, p < .05$), and agreeableness scores ($r = -.23, p < .05$) were significantly related to the first criterion measure—technical proficiency. The regression analyses revealed that the addition of GMA
Table 1: Descriptive Statistics and Intercorrelation Matrix

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>01. Technical Proficiency</td>
<td>-.01</td>
<td>1.01</td>
<td>(.95)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>02. Relationship Management</td>
<td>.01</td>
<td>1.02</td>
<td>-.01</td>
<td>(.92)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>03. Documentation standards</td>
<td>.01</td>
<td>1.02</td>
<td>-.01</td>
<td>(.89)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>04. Self-Development</td>
<td>.03</td>
<td>1.01</td>
<td>-.01</td>
<td>(.82)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>05. Conscientiousness</td>
<td>2.65</td>
<td>.24</td>
<td>-.18</td>
<td>.27</td>
<td>.09</td>
<td>.12</td>
<td>(.81)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>06. Extroversion</td>
<td>2.08</td>
<td>.37</td>
<td>-.09</td>
<td>.20</td>
<td>-.04</td>
<td>.15</td>
<td>(.88)</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>07. Agreeableness</td>
<td>2.52</td>
<td>.31</td>
<td>-.23</td>
<td>.23</td>
<td>-.03</td>
<td>.16</td>
<td>.44</td>
<td>.22</td>
<td>(.81)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>08. Emotional Stability</td>
<td>2.33</td>
<td>.37</td>
<td>.08</td>
<td>.10</td>
<td>.00</td>
<td>-.16</td>
<td>.45</td>
<td>.34</td>
<td>.35</td>
<td>(.85)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>09. Openness to Experience</td>
<td>2.50</td>
<td>.25</td>
<td>.02</td>
<td>-.17</td>
<td>-.00</td>
<td>.01</td>
<td>.38</td>
<td>.08</td>
<td>.23</td>
<td>(.77)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. General Mental Ability</td>
<td>26.08</td>
<td>5.77</td>
<td>.36</td>
<td>-.37</td>
<td>-.00</td>
<td>.10</td>
<td>-.30</td>
<td>.00</td>
<td>-.31</td>
<td>-.04</td>
<td>.31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Sex (1=men; 2=women)</td>
<td>1.30</td>
<td>.46</td>
<td>-.01</td>
<td>.04</td>
<td>-.13</td>
<td>.27</td>
<td>.30</td>
<td>.01</td>
<td>.13</td>
<td>.07</td>
<td>.09</td>
<td>-.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Age</td>
<td>39.97</td>
<td>8.58</td>
<td>-.04</td>
<td>-.07</td>
<td>-.28</td>
<td>-.01</td>
<td>-.08</td>
<td>-.25</td>
<td>-.04</td>
<td>-.16</td>
<td>.17</td>
<td>.16</td>
<td>-.17</td>
<td></td>
</tr>
<tr>
<td>13. Tenure</td>
<td>5.52</td>
<td>5.78</td>
<td>.11</td>
<td>.17</td>
<td>-.32</td>
<td>.12</td>
<td>-.19</td>
<td>.08</td>
<td>.03</td>
<td>-.09</td>
<td>-.05</td>
<td>.04</td>
<td>-.03</td>
<td>.39</td>
</tr>
</tbody>
</table>

Note: Reliability estimates (a) are presented in the diagonal. Correlations > .17, p < .05; correlations > .25, p < .01.
scores at Step 2 added significant variance (total $R^2 = .06$, $\Delta R^2 = .06$, $p < .05$) over and above the variance contributed by the demographic variables. Although agreeableness was not part of the first hypothesis, we then entered agreeableness scores into the equation, because they were more highly correlated with the performance ratings than conscientiousness scores; they contributed no appreciable variance ($\Delta R^2 = .01$, ns). To directly test the first hypothesis, we ran a separate equation without agreeableness. Conscientiousness scores did not contribute unique variance ($\Delta R^2 = .00$, ns) beyond the variance contributed by GMA and the demographic variables in the explanation of technical proficiency.

**Hypothesis 2.** As shown in Table 1, four predictor measures were significantly related to factor two, relationship management skills, namely conscientiousness ($r = .27$, $p < .01$), agreeableness ($r = .23$, $p < .05$), openness to experience ($r = -.17$, $p < .05$), and GMA ($r = -.37$, $p < .01$) scores. The regression analyses revealed that the addition of conscientiousness scores at Step 2 added significant variance (total $R^2 = .25$, $\Delta R^2 = .06$, $p < .05$) over and above the variance contributed by the demographic variables and GMA. The other personality variables did not contribute unique variance to the explanation of relationship management performance.

**Hypothesis 3.** As shown in Table 1, only extroversion ($r = .20$, $p < .05$), age ($r = -.28$, $p < .01$), and tenure ($r = -.32$, $p < .01$) were significantly related to factor three—adherence to documentation standards and requirements. Extroversion scores did not contribute unique variance ($\Delta R^2 = .02$, ns) beyond the variance contributed by the control variables in the explanation of adherence to documentation standards and requirements.

**Hypothesis 4.** As shown in Table 1, agreeableness ($r = .16$, $p < .10$) and emotional stability ($r = -.16$, $p < .10$) were related to the final criterion measure, self-initiated professional development. The regression analyses revealed that the additional variance brought about by adding agreeableness scores at Step 2 approached significance (total $R^2 = .16$, $\Delta R^2 = .03$, $p = .10$) over and above the variance contributed by the demographic variables and GMA. Emotional stability entered at the third step (total $R^2 = .23$, $\Delta R^2 = .07$, $p < .05$) added unique variance to the explanation of self-initiated professional development.

In summary, our findings were mixed. Results of the regression analyses provided partial support for Hypotheses 1, 2, and 4, but no support for Hypothesis 3.

**DISCUSSION AND IMPLICATIONS FOR RESEARCH**

Consistent with results of meta-analytic studies that have indicated that the mean observed correlations between FFM scale scores and supervisor ratings of job performance tend not to exceed the teens (e.g., Barrick, Mount, & Judge, in press; Hurtz & Donovan, 2000), our bivariate correlation analyses yielded low correlations between the FFM scale scores and job performance ratings. However, considering the variables together in the regression analyses provided a more accurate picture of the relationships. As hypothesized, GMA scores and technical proficiency were significantly related in our study of IT professionals. Individuals with greater GMA are likely to write code with fewer errors, solve systems problems more effectively, generate solutions more quickly and innovatively, and so on, compared to less intelligent associates. Surprisingly, conscientiousness
was unrelated to technical proficiency.

Increasingly critical to the success of IT professionals in contemporary organizations are effective relationships. Close
tness to the end user is necessary for definition of project requirements, which when done well reduces subsequent rework. Similarly, work in project teams requires interpersonal interaction. Our tests of Hypothesis 2 indicated that only conscientiousness contributed unique variance to the explanation of relationship management effectiveness. Oriented toward follow-up, being organized, and having impulse control and attention to detail, conscientious workers were effective at relationship management. This finding supports the argument that personality scores contribute unique variance to an important aspect of job performance well beyond the variance contributed by GMA.

The absence of significant relationships between relationship management and extroversion, agreeableness, and emotional stability, in part, is inconsistent with Hypothesis 2. Yet, IT professionals tend to be more introverted (Fowler, 1999), and thus perhaps the introverted IT workers can be perceived as overly expressive, inordinately talkative, unnecessarily spontaneous, or even politically motivated. These are characteristics that typically frustrate introverts and therefore could logically explain the finding of extroverted IT employees being rated as less effective in managing relations at work. Perhaps because much of programmers’ work-related interaction is content based, conscientiousness may be the most relevant predictor of relationship management.

While the bivariate correlation between extroversion and adherence to documentation standards and requirements was significant, the regression analysis revealed that extroversion scores contributed no unique variance. Managers insist that effective documentation is important to overall job performance. In computer-related fields, documentation is often “drilled in” as a must-do activity, which conscientious individuals should dutifully execute. Our results suggest that individual differences in conscientiousness did not explain performance differences in adherence to documentation standards and requirements. Subsequent research with other personality and GMA measures may yield more promising results. Recent evidence suggests that biodata selection instruments explain considerable variance in job performance over and above the variance accounted for by GMA and the Five-Factor Model constructs (Mount, Witt, & Barrick, 2000). Biodata taps into personal history and behavioral preferences. Accordingly, researchers may find utility in exploring biodata as a predictor of IT job performance.

With regard to Hypothesis 4, the relationships of agreeableness and emotional stability with self-initiated professional development suggests that individuals who are cooperative (high agreeableness) and insecure (low emotional stability) are more likely to seek continuing education or self-study types of activities. In general, selecting workers low in emotional stability would be unwise. However, hiring workers high in agreeableness might be of utility, as they may be predisposed to initiate self-development.

While replication is needed, the study’s results are encouraging and have initiated research on the Five-Factor Model with information technology professionals. Conscientiousness, openness to experience, and agreeableness each added unique variance to the explanation of aspects of job performance over and above the variance contributed by GMA, sex, age, and organizational tenure.
Several weaknesses of the present study, however, limit the generalizability of the findings and merit attention. The moderately small sample size did not permit cross-validation and poses a potential problem in terms of the stability of the correlation coefficients. Also, participants emanated from only one organization. Yet, a strength of the present study was the development of the job-relevant criterion items, which focused on the aspects of IT job performance critical to organizational success. These content-valid items assessed elements of job performance beyond those typically measured, and this may be the first study to assess IT job performance simultaneously looking at these business-critical performance dimensions. Finally, the use of factor analysis to create orthogonal factor scores optimized the amount of variance accounted for by the predictors.

IMPLICATIONS FOR PRACTICE

The present findings have potential implications for both IT supervisors and human resources managers. Put simply, information technology workers cannot be hired “willy-nilly” and expected to deliver superior performance, under increasing time constraints and metamorphosing technologies. Our findings suggest that firms using GMA and personality testing may not only promote better selection of IT workers in certain circumstances, but also facilitate more effective utilization and development of human resources in this profession.

Our preliminary findings suggest that highly intelligent IT persons are more likely to be technically adept in their jobs. In addition, conscientious technicians will tend to effectively manage relations in their work environment. Given the increasing collaborative efforts that a worker in this field faces, this finding may have high utility. Lastly, agreeable IT workers may be more apt to seek additional educational or skill building opportunities on their own, which should only enhance their eventual contribution to the firm.

In some ways, our findings call attention to and perhaps further highlight the unique challenges in selecting and managing IT professionals. Thus, universal generalizations and prescriptions for selecting technicians and managing their job performance are potentially dangerous. It is likely that effective IT managers adopt different approaches in coaching and training their employees, based upon their particular personality. For example, managers may more closely monitor the work progress of subordinates low in conscientiousness than those high in conscientiousness. Indeed, adapting different motivational styles to fit the personalities of subordinates is a critical element of managerial performance (Davis, Skube, Hellervik, Gobel, & Sheard, 1992). Thus, future research may eventually lead to empirically sound approaches for not only selecting but also developing employees in the IT field.

REFERENCES


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