



Research article

An investigation of personality traits in relation to job and career satisfaction of information technology professionals

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Abstract

Personality traits were examined in relation to job satisfaction and career satisfaction for 1059 information technology (IT) professionals. As hypothesized, eight traits were significantly related to both job and career satisfaction: Assertiveness, Emotional Resilience, Extraversion, Openness, Teamwork Disposition, Customer Service Orientation, Optimism, and Work Drive. Regression analyses indicated that sets of three and four traits accounted for 17 and 25%, respectively, of job and career satisfaction variance. As expected, career satisfaction correlations were of generally higher magnitude than corresponding job satisfaction correlations. Results were interpreted in terms of IT research and theorizing. The findings that Extraversion and Teamwork Disposition were related to job and career satisfaction contravenes job descriptions and career planning advice, suggesting that independent introverts are better suited for IT work. Given that adult personality is antecedent to work experiences, it was suggested that future research proposing to show the effects of work-related factors such as pay and challenge on job or career satisfaction should first control for personality traits. Other practical and theoretical implications were noted.

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Introduction

The present study addresses the job and career satisfaction of information technology (IT) professionals. There are several reasons for studying these factors. First, job satisfaction of IT professionals is related to employee turnover (Bartol and Martin, 1982; Bartol, 1983), which is a persistent problem in the IT field (e.g., Jiang *et al.*, 2001). For example, Whitaker (1999) estimates an annual turnover rate of 20% for IT workers, costing corporations from one to seven times the employee's salary to replace him or her (Kochanski and Ledford, 2001). In fact, changing jobs has become so common that a 'turnover culture' has become normative in the IT field (Moore and Burke, 2002).

Career satisfaction has been found to be related to turnover intention and leaving an occupation (Cramer, 1993; Rambur *et al.*, 2005). In the IT field, career

satisfaction has been linked to personnel turnover through the company's ability to meet an employee's career desires and motivations (Jiang and Klein, 2002). In addition, both job and career satisfaction are related to global life satisfaction (London *et al.*, 1977; Burke, 2001; Lounsbury *et al.*, 2004c), which is considered by some to be the overarching, ultimate outcome of human experience (Andrews, 1974). Finally, career satisfaction is an important variable because it represents an overall summary of how a person feels about a lifetime of work – which has been estimated to be about 100,000 h for the typical American (Career Strategists, 2006) – and all the diverse activities and experiences that comprise a career.

In recent years, there has been growing interest in looking at the relationship between personality traits and both job satisfaction and career satisfaction. By way of

illustration, in a meta-analysis of 163 samples, Judge *et al.* (2002) found that Extraversion and Neuroticism were consistent predictors of job satisfaction and that 17% of the variance in job satisfaction could be explained by personality traits. Also, in a sample of nearly 6000 individuals going through career transition, Lounsbury *et al.* (2003b) found that several individual personality traits were related to career satisfaction, with one set of traits accounting for 17% of the variance in career satisfaction.

In addition to advancing our knowledge about which personality traits are related to job and career satisfaction for IT professionals, another purpose of the present study was to test hypotheses generated on the basis of empirical research and theoretical models regarding IT and Information Science work motivation, career dynamics, and personnel psychology. Moreover, we interpreted the results in terms of these models as well as attendant practical and theoretical implications. The personality traits we chose to examine were the ones measured by Lounsbury *et al.* (2003b), since in their study all the traits form a fairly comprehensive set of normal personality dispositions and nearly all of them were found to be significantly related to job and/or career satisfaction for a diverse occupational sample. The traits we investigated were: five traits adapted from one of the most widely accepted models of normal personality – the Big Five (cf., McCrae and Costa, 1997; de Raad, 2000): Conscientiousness, Extraversion, Emotional Resilience, Openness, and Teamwork Disposition (which is analogous to the Big Five factor of Agreeableness); five traits narrower in conceptual scope than the Big Five: Assertiveness, Image Management, Optimism, Tough-Mindedness, and Work Drive and one work-related personal style attribute: Customer Service Orientation. To formulate directional hypotheses for most traits, we relied either on an equivalent relationship based on a different set of constructs such as career anchors (Schein, 1978) reported in the IT literature or on the following rationale deduced from Holland's (1985, 1996) vocational theory. Holland's central thesis is that 'people flourish in their work environment when there is a good fit between their personality type and the characteristics of the environment. Lack of congruence between personality and environment leads to dissatisfaction...' (p. 397). Given that there are individual differences between members of an occupation on a given personality trait, one would expect, and, indeed, many studies find (e.g., Holland *et al.*, 1990), a positive relationship between the trait and measures of vocational satisfaction (including job and career satisfaction).

More specifically, the following hypotheses were advanced in the present study, with a brief rationale provided for each hypothesis.

(1) *Emotional Resilience will be positively related to job and career satisfaction.* Most IT workers must handle high levels of job stress, particularly because of the key role that information systems (IS) play in most organizations, the unrelenting demand for IT systems to work well, and the constant pressure for greater efficiency and faster turnaround of results (Lin and Carley, 2003; Jepson, 2004), which more stable, resilient individuals will be better able to handle, but which can lead to emotional exhaustion (Moore, 2000) and burnout (Huang, 1998, 2001) of IT

professionals. In view of the importance of this trait in dealing with stress, it was expected that Emotional Resilience would be one of the traits most highly related to job satisfaction and, given that stress is cumulative over time (e.g., Barling *et al.*, 2004), that it would be most highly related to career satisfaction.

(2) *Optimism will be positively related to job and career satisfaction.* The rationale for this hypothesis is also based on the high levels of stress facing IT employees. Individuals with higher levels of optimism show greater task persistence in the face of adversity, bounce back more quickly from job setbacks and disappointments, and, generally expect more positive experiences and outcomes in the future than less optimistic individuals (Seligman, 1990). As in the case of the first hypothesis, and in view of the prevalence of chronic job stress in IT jobs as well as the importance of responding to such stress in a positive manner, a larger effect was expected for the Optimism-satisfaction relationship than for the relationship between satisfaction and the other traits except for Emotional Resilience

(3) *Extraversion will be positively related to job and career satisfaction.* Interpersonal and communication skills, including the extraversion-related activities of expressing one's ideas and views, communicating readily in group settings, taking the initiative for interaction in leaderless discussion groups, forming positive relationships and networking, displaying interpersonal warmth, joining groups and associations, and facilitating meetings and discussions (McCrae and Costa, 2003) are widely recognized as comprising a critical IT skill area (e.g., Lee *et al.*, 1995; Tesch *et al.*, 2003). Similarly, social needs are regarded as a basic motivator of productive work behavior of IS employees (Crepeau *et al.*, 1992) and Extraversion is an important foundation for Schein's (1978) 'general Managerial competence' career anchor, which has been used to characterize IS professionals (Jiang and Klein, 1999/2000) and entry-level workers (Jiang *et al.*, 2001), and for which a positive correlation with career satisfaction was observed in the latter study. In addition, interpersonal skill has been identified as an important requisite skill for IS professionals (Watson *et al.*, 1990) and was one of three main areas in which a positive discrepancy between perception and expectation was related to career satisfaction (Tesch *et al.*, 2003). In a study of IT developers, Clark *et al.* (2003) found that exceptional developers had significantly higher Extraversion scores than non-exceptional developers.

(4) *Openness will be positively related to job and career satisfaction.* Openness refers to receptivity to change, learning, and new experiences (Lounsbury *et al.*, 2003b). More so than most other occupations, IT is a field undergoing significant – some have called it revolutionary (Davis *et al.*, 2006) – technological change on an ongoing basis which, in turn, requires continued professional learning. In this vein, Gallivan (2004) found that job satisfaction of IT professionals was positively related to their openness to experience.

(5) *Customer Service will be correlated positively with job and career satisfaction.* Several studies have successfully utilized Schein's (1978) career anchors to investigate motivation and career dynamics of IT workers (e.g., Igarria



et al., 1991a,b; Crepeau et al., 1992). One of these career anchors is Service, referring to serving and helping other people, which has been found to be positively related to career satisfaction of entry-level employees (Jiang et al., 2001). Accordingly, we expected the trait of Customer Service Orientation to be similarly positively related to career satisfaction of IT employees.

(6) *Assertiveness will be positively related to job and career satisfaction.* Since Assertiveness is a key component of leadership and managing other people, and as managerial competence and managerial orientation have been found to be an important career anchor for IS employees (e.g., Jiang et al., 2001) and to be positively related to job and career satisfaction of IS employees (Igarria et al., 1991a, b), we expected Assertiveness to be positively related to job satisfaction and career satisfaction in the present sample.

(7) *Work Drive will be moderately, positively related to job and career satisfaction.* We base this hypotheses on IT research on several related constructs. Bartol and Martin (1982) identified IS employees as having higher levels of achievement motivation (which is related to Work Drive – Lounsbury et al., 2004a) than professionals ‘in many other comparable professions’ (Bartol and Martin, 1982: 50). Also, Wetherbe et al. (1999) found that achievement is a strong motivator for IS managers and developers, while Smits et al. (1993) found that achievement motivation is a meaningful variable for differentiating the preferred job characteristics and work attributes of IS professionals, including certainty about career direction. Additionally, Jiang et al. (2001) found that internal career anchors, including need for competence and doing well on one’s job, were positively related to career satisfaction. However, in their research on job involvement – which is related to Work Drive (Lounsbury et al., 2004a) – Igarria et al. (1994) found that the groups formed on the basis of high, medium, and low levels of job involvement did not differ significantly on job satisfaction or career satisfaction (though job involvement did moderate the relationships among work experiences, career expectations, and quality of work life). Accordingly, while we expected to find a positive Work Drive–satisfaction correlation, we anticipated the effect size to be relatively smaller than for the previous hypotheses.

(8) *Teamwork Disposition will be positively related to job satisfaction and career satisfaction.* In many companies, the work of individual IT employees is performed in concert with other IT employees and with employees from other departments as part of a project where the outcomes affect all participants. Schneider (2002) summarizes research involving nearly 900 senior IT professionals with a focus on factors contributing to the success of IT projects. He concluded that ‘...teamworking and motivation are more important than technical competence or formal training.’ On the other hand, working somewhat in opposition to teamwork disposition for IT employees is a strong, traditional emphasis on working autonomously and independently. As summarized by Griesser (1993) in his review of IS professionals’ work motivation, ‘Many individuals prefer autonomy/independence as opposed to increased group or team activity’ (p. 23).

In addition to the above hypothesized relationships, in the case of three traits – Conscientiousness, Image

Management, and Visionary style – there is scant evidence in the extant literature that the trait represents a core competence of IT workers or an individual difference variable which might be expected to be related to work satisfaction. In their study of IT developers, Clark et al. (2003) did not find a significant difference (at the traditional $P < 0.05$ level), between exceptional and non-exceptional developers on Conscientiousness. Also, in their study of IT professionals, Witt and Burke (2002, 2006) found that Conscientiousness was found to be significantly, positively related to supervisors’ ratings of relationship management but not significantly related to three other criteria of job performance – technical proficiency, documentation standards, and self-development. Accordingly, for these three traits we did not expect to find a significant relationship with either job or career satisfaction. Verification of these non-significant findings would be important not only because it would provide initial evidence for omitting these constructs in any nomothetic network (Messick, 1989) for job and career satisfaction of IT employees, but also because it would mitigate against a potential interpretation of all positive relationships being the artifactual result of common method bias (Cook and Campbell, 1979).

We also examined how much of the variance in job satisfaction and career satisfaction could be accounted for by the set of personality traits. Since at present, there is insufficient support from prior findings to justify the precedence of one trait over another, predictions from the regression analysis to address this question were not advanced. Nevertheless, this is an important analysis since it could show that a large amount of the variance in job or career satisfaction is explained by personality traits. Since personality traits precede job and career experiences, this would leave open the question of whether other variables reflecting work characteristics or job experience can account for unique variance in job or career satisfaction above and beyond the personality traits.

One final goal of the present study was to assess whether the correlations between personality traits and career satisfaction would be of larger magnitude than the correlations between personality traits and job satisfaction. Personality traits are by definition, relatively enduring characteristics of individuals over time-and-across situations (Pervin and John, 1997). Since, for most people, career satisfaction represents a longer period of time than job satisfaction, there is more opportunity in a career than a job for personality traits to have an impact on satisfaction, which leads to the hypothesis that correlations between the career satisfaction and the traits studied here would be of larger magnitude than the corresponding correlations between the trait and job satisfaction.

Method

Overview

The data for this study were drawn from an archival source representing responses collected on the Internet as part of personality assessment and career planning services offered by an international strategic human resources company. The 1059 individuals who listed their present or most

recent job as being in the field of IT were selected from this data source. Owing to confidentiality considerations, the identities of the companies where individuals worked were not available. Data were collected between March 2004 and March 2006.

Participants

Of the total sample of 1059 participants, 77% were male and 23% were female. Relative frequencies by age group were: under 30, 34%; 30–39, 40%; 40–49, 24%, and 50 and over, 2%. Race/ethnic data were not available. The participants came from a variety of industries, including IT services (35%), banking and financial services (12%), manufacturing (10%), consumer products (6%), telecommunications (6%), communications (5%), retail (4%), healthcare (2%), petroleum (2%), printing (2%), professional services (2%), and automotive (1%).

Measures

Personality traits

The personality measure used in this data source was the Personal Style Inventory, a normal, work-based personality inventory which has been used in a variety of settings internationally, mainly for career development and pre-employment screening purposes (Lounsbury et al., 2003a, b, 2004a, c; Pemberton et al., 2005; Williamson et al., 2005). Reliability and validity information on the PSI is provided by Lounsbury and Gibson (2006).

A brief description of each of the personality constructs examined in the present study is given below along with the Cronbach's coefficient α for that scale observed in the present study.

Assertiveness – a person's disposition to speak up on matters of importance, expressing ideas and opinions confidently, defending personal beliefs, seizing the initiative, and exerting influence in a forthright, but not aggressive manner. Coefficient $\alpha = 0.79$.

Conscientiousness – dependability, reliability, trustworthiness, and inclination to adhere to company norms, rules, and values. Coefficient $\alpha = 0.77$.

Customer Service Orientation – striving to provide highly responsive, personalized, quality service to (internal and external) customers; putting the customer first; and trying to make the customer satisfied, even if it means going above and beyond the normal job description or policy. Coefficient $\alpha = 0.70$.

Emotional Resilience – overall level of adjustment and emotional resilience in the face of job stress and pressure. Coefficient $\alpha = 0.81$.

Extraversion – tendency to be sociable, outgoing, gregarious, expressive, warmhearted, and talkative. Coefficient $\alpha = 0.82$.

Image Management – reflects a person's disposition to monitor, observe, regulate, and control the self-presentation and image s/he projects during interactions with other people. Coefficient $\alpha = 0.79$.

Openness – receptivity/openness to change, innovation, novel experience, and new learning. Coefficient $\alpha = 0.81$.

Optimism – having an upbeat, hopeful outlook, concerning situations, people, prospects, and the future, even in the

face of difficulty and adversity; a tendency to minimize problems and persist in the face of setbacks. Coefficient $\alpha = 0.83$.

Teamwork Disposition – propensity for working as part of a team and functioning cooperatively on work group efforts. Coefficient $\alpha = 0.83$.

Work Drive – disposition to work for long hours (including overtime) and an irregular schedule; investing high levels of time and energy into job and career, and being motivated to extend oneself, if necessary, to finish projects, meet deadlines, be productive, and achieve job success. Coefficient $\alpha = 0.81$.

Visionary vs Operational – personal style emphasizing creating an organizational vision and mission, developing corporate strategy, identifying long-term goals, and planning for future contingencies vs a personal style that focuses on day-to-day activities and accomplishments, short-term goals, current problems, and implementation of plans. Coefficient $\alpha = 0.80$.

Job and career satisfaction

Job satisfaction was measured by a seven-item scale tapping job content, pay, opportunities for advancement, security, coworkers, supervision, and job as a whole. Career satisfaction was measured by a five-item scale dealing with career progress and trajectory, career advancement, future career prospects, and career as a whole that has been shown to display sound reliability and construct validity (Lounsbury et al., 2004b). The satisfaction items were placed on a seven-point scale with verbally opposing anchors at each end (e.g., 'I am very satisfied with the way my career has progressed so far.' vs 'I am very dissatisfied with the way my career has progressed so far.') Coefficient α for the job satisfaction scale = 0.78; coefficient α for the career satisfaction scale = 0.81.

Results

To check for the presence of common-method bias, we used the Harman one-factor test (Podsakoff and Organ, 1986) applied to a principal components analysis of all the study variables. Because there was no general factor in the unrotated factor structure, we concluded that there was not a common-method bias in the present data. In addition, we applied the confidence interval test (Anderson and Gerbing, 1988) for all pairwise correlations of traits, and found that none of the confidence intervals included 1.00 or -1.00 ; therefore, we concluded that the set of trait inter-correlations demonstrated discriminant validity.

The correlations between the personality traits and job and career satisfaction are displayed in Table 1. Consistent with the first eight hypotheses, job and career satisfaction were significantly (all at the $P < 0.01$ level) and positively related to Emotional Resilience ($r = 0.36$, $r = 0.42$, respectively), Extraversion ($r = 0.22$, $r = 0.31$), Openness ($r = 0.16$, $r = 0.31$), Teamwork Disposition ($r = 0.23$, $r = 0.24$), Assertiveness ($r = 0.22$, $r = 0.33$), Customer Service Orientation ($r = 0.22$, $r = 0.34$), Optimism ($r = 0.34$, $r = 0.40$), and Work Drive ($r = 0.20$ and $r = 0.21$). Also as predicted, Conscientiousness, Image Management, and Visionary style were not significantly related to job satisfaction (r 's = 0.02, -0.08 , and 0.01, respectively). Conscientiousness and

Table 1 Correlations between personality traits and: job and career satisfaction

Trait	Satisfaction	
	Job	Career
<i>Big Five-related traits</i>		
Conscientiousness	0.02	0.04
Emotional Resilience	0.36**	0.42**
Extraversion	0.22**	0.31**
Openness	0.16**	0.17**
Teamwork Disposition	0.23**	0.24**
<i>Narrow Traits</i>		
Assertiveness	0.22**	0.33**
Customer Service Orientation	0.22**	0.24**
Image Management	-0.08	0.01
Optimism	0.34**	0.40*
Work Drive	0.20**	0.21**
Visionary	0.01	0.11*

n = 1059.

*P < 0.05; **P < 0.01.

Image Management were not significantly related to career satisfaction (r^2 s = 0.04 and 0.01, respectively), but Visionary Style was correlated with career satisfaction at a low ($r = 0.11$) but significant ($P < 0.05$) level. Also, as predicted, relatively higher correlations with job and career satisfaction were observed for Emotional Resilience and Optimism. Using a t -test for the difference between two dependent correlations (Cohen and Cohen, 1983: 56–57), all possible pairwise correlations were evaluated to test which of the 11 correlations presented in the each column of correlations in Table 1 are significantly different from each other. Although the significant differences are too numerous to list here, in the case of job satisfaction, the correlations for Emotional Resilience and Optimism were significantly higher than the other nine correlations. In the case of career satisfaction, the correlation with Emotional Resilience was higher than the correlations for the nine other traits while the correlation for Optimism was not significantly different than the correlation for Assertiveness, but it was significantly different than either of the other correlations with career satisfaction.

To examine the question of how much variance can be accounted for by the set of personality variables in predicting job and career satisfaction, two stepwise multiple regression analyses were performed (Table 2). Multiple rather than hierarchical regression analyses were used because, as noted earlier, there is a lack of evidence from prior findings to indicate the precedence of one trait over another in predicting job or career satisfaction. To predict job satisfaction, the first variable to enter the equation was Emotional Resilience, accounting for 12.7% of the variance, followed by Teamwork Disposition, which contributed an additional 3.1% unique variance ($P < 0.01$), and Work Drive, which accounted for an additional 1.8% of the unique variance ($P < 0.01$) in job satisfaction. These three variables jointly yielded a multiple correlation of 0.412, accounting for 17.5% of the variance in job satisfaction ($P < 0.01$). To predict career satisfaction, Emotional Resilience entered the equation first, accounting for 17.3% of the variance in career satisfaction ($P < 0.01$), followed by

Table 2 Results of stepwise multiple regression analysis for job and career satisfaction

Step	Variable	Multiple R	R ²	R2 change
<i>Dependent variable: job satisfaction</i>				
1	Emotional Resilience	0.356**	0.127**	0.127**
2	Teamwork Disposition	0.397**	0.158**	0.031**
3	Work Drive	0.419**	0.175**	0.018**
<i>Dependent variable: career satisfaction</i>				
1	Emotional Resilience	0.415**	0.173**	0.173**
2	Assertiveness	0.461**	0.213**	0.040**
3	Optimism	0.481**	0.232**	0.019**
4	Teamwork Disposition	0.495**	0.245**	0.013*

n = 1059.

*P < 0.05, **P < 0.01.

Assertiveness which added 4% of the variance ($P < 0.01$), Optimism which accounted for 1.9% of the variance ($P < 0.01$), and Teamwork Disposition, which accounted for an additional 0.7% of the variance in career satisfaction ($P < 0.01$). These four variables in combination produced a multiple correlation of 0.495 ($P < 0.01$), accounting for 24.5% of the variance in career satisfaction ($P < 0.01$).

Regarding the final research question, using a t -test for the difference between two dependent correlations (Cohen and Cohen, 1983), none of the individual correlations for career satisfaction were significantly greater than the corresponding correlations for job satisfaction. However, we conducted a Wilcoxon-matched pairs signed-rank test (Conover, 1999) to assess whether, as a set, the correlations for career satisfaction were higher than the corresponding correlations for job satisfaction. The resulting value of Wilcoxon $T = -2.95$ ($P < 0.01$) indicated that the career satisfaction correlations were significantly higher than the job satisfaction correlations. In addition, in the multiple regression analyses 7% more variance in satisfaction was accounted for by the personality traits entering the prediction equation for career satisfaction than for the personality traits predicting job satisfaction.

Discussion

The present results clearly demonstrate that personality traits are linked to both the job satisfaction and career satisfaction of IT professionals. All eight of the hypothesized relationships were supported and are generally consistent with similar findings based on different approaches, notably career anchors, work motivators, and core skills of IT professionals – which enhance the convergent validity of common constructs – while the predicted non-significant findings provide evidence for the discriminant validity of the trait relationships. Also, as will be discussed below, several of the present findings are consistent with meta-analytic findings across occupations, which increases our confidence in their construct validity.

Turning to the individual results, Emotional Resilience was the trait most highly correlated with job satisfaction and career satisfaction. One obvious explanation for this finding is that individuals who are emotionally stable can better handle stress on the job, which, is unfortunately, an inherent characteristic of most IT jobs (Jepson, 2004). Savvas (2004) reports that 90% of IT directors say that their health suffers as a result of their work, with many citing an 'impossible workload' as a primary problem, although they listed other major sources of strain such as constant demands from their managers, unrealistic expectations, and feelings of job insecurity. This result is also consistent with three meta-analyses based on many different occupations, including: (1) DeNeve and Cooper's (1998) finding that Emotional Resilience was one of the traits most closely related to subjective well-being; (2) Judge *et al.*'s (2002) finding that it was one of the most generalizable correlates of job satisfaction across occupations; and (3) Lounsbury *et al.*'s (2003b) finding that Emotional Resilience was a substantive predictor of career satisfaction across occupational groups. In the IT context, the importance of Emotional Resilience is likely to increase for IT professionals in the future given trends toward greater globalization of work and more intense international competition, labor market deregulation, technological advances (especially in the field of IT), outsourcing of work, and changing organizational structures (for a review of such factors as they influence the career environment, see Storey, 2000).

Q10

The explanation for the relatively higher positive correlation between Optimism and job satisfaction as well as career satisfaction than corresponding correlations for the other traits examined here may also be related to the multiple forms of stress facing IT workers; in particular, the distinctive way more optimistic individuals appraise and respond to stressors. Research on optimism has found that individuals who are more optimistic perceive stressors less negatively than individuals who are more pessimistic (Scheier *et al.*, 2001). Also, people who are more optimistic tend to use more active coping methods to deal with stress (Aspinwall *et al.*, 2001), show greater task persistence in the face of adversity (Seligman, 1990), bounce back more quickly from job setbacks and disappointments (*ibid.*), and, generally expect more positive experiences and outcomes in the future than less optimistic individuals. Another way to look at differences in optimism is *explanatory style* (Seligman, 1990; Gillham *et al.*, 2001): Optimists tend to internalize positive events and see themselves as the cause of success, while they blame failure on external factors that are transient and will not last. In contrast, pessimists tend to blame themselves as the cause of failure and attribute success to external factors that are unlikely to change. Given the high stakes of IT work and the momentous consequences for success and failure, it may be that IT work is one of the most fruitful areas for observing differences between individuals on Optimism and Emotional Resilience. It may be that their correlations with work satisfaction and career satisfaction are higher for IT employees than those in less impactful, lower stress occupations. In this light, it is interesting to note Judge *et al.*'s (2002) estimated true correlation between job satisfaction and Emotional Stability for a varied sample of

occupations was 0.29 vs the present correlation of 0.36 between Emotional Resilience and job satisfaction.

IT work is widely regarded as being populated mainly by introverts, (e.g., Myers and McCaulley, 1985). In one study of IT professionals (including individual workers and managers) using the Myers-Briggs Type Indicator, the Institute for Management Excellence (2006) concluded that they 'tend to be much more introverted than extraverted...', and found that whereas only 25% of the general population was extraverted, 67% of computer professionals are introverted. Their study contends that IT work favors introversion because of the long hours spent working alone. However, these may be somewhat dissatisfying hours, as the results of the present study indicates that more extraverted IT workers are more satisfied with their jobs and careers than less extraverted IT workers. That the correlation is slightly larger for career satisfaction than job satisfaction can be interpreted as the larger amount of time for satisfaction related to Extraversion to accumulate. The present finding is interesting because it goes against popular conceptions – that is, that more introverted individuals are happier than more extraverted individuals working in IT jobs – and leads to a conundrum for career planning, vocational mapping, occupational counseling, and other activities that help individuals choose an occupation and/or make a decision about taking a job in IT based on their personality scores: Should more extraverted individuals be discouraged from pursuing an IT job or career? And, similarly, should more introverted individuals be cautioned about choosing a job or career in IT? To better answer this type of question, we would need to compare relative probabilities of job and career satisfaction for IT compared to other occupations, ideally when such comparative information is available for other individuals with similar scores on Introversion-Extraversion to the individual being counseled. It might be that individuals who score in the lowest quartile on an Extraversion scale would be much less satisfied working in an occupation that requires extensive social interaction such as public relations or field sales than they would be working in IT. Of course, many other factors would usually be considered in situations where an individual chooses an occupation, including educational background, job history, professional knowledge and skills, salary, and working conditions, to name but a few. Nevertheless, the present results should serve as a cautionary note for any person, agency, or source that suggests that more introverted individuals would be more likely to be satisfied working in IT than more extraverted individuals.

It should be noted that the positive finding for Extraversion aligns well with recommendations that interpersonal skills and communication should receive special emphasis in IT professional training, education (including curricular design), and development (e.g., Lee *et al.*, 1995). There are several organizational implications of the present findings concerning Extraversion. First, all other factors being relatively equal, companies may want to try to recruit and hire individuals with higher levels of Extraversion. Second, those parties involved in career planning and development should recognize that Extraversion is positively related to job and career satisfaction and, at the very least, inform individuals seeking vocational guidance about



this relationship and not necessarily dissuade extraverts from choosing IT for their vocations because of their higher scores on Extraversion. Third, since Extraversion is related to higher levels of job and career satisfaction, employers may want to offer IT employees more opportunities to talk, fraternize, and personally interact with each other (and other employees), through company-sponsored social events, recreational groups, outings, luncheons, discussion groups, and other activities that facilitate social interaction and extraversion-related behaviors.

Regarding the question of working independently *vs* interdependently, the traditional view has been that IT employees must be able to work independently (cf. US Department. of Labor, 1991). More recently, however, there has been an increasing emphasis on the need for IT workers to work collaboratively and in support of each other. As summarized by ITTraining (2001),

Training for IT professionals is not just about teaching staff how to work with the latest hardware and software. Other skills like communication and teamwork are becoming increasingly important as IT departments work across the business rolling out technology-based projects. (p. 42).

As in the case of Extraversion and career counseling, the present findings present a dilemma for whether to recommend IT occupations to individuals who prefer to work as part of a team or independently. If one considers the present results and recent analyses of IT skills for project work, teamwork disposition would be recommended, but if one turns to most sources of vocational and occupational planning information, independence disposition is the more important trait for IT work. For example, the Occupational Information Network (O*NET), which has replaced the Dictionary of Occupational Titles as the nation's primary source of occupational information, lists Independence as a key Work Style and Work Value for IT occupations (O*NET, 2006). We believe that there is no simple answer to the question of whether disposition for teamwork or independence are more important personal attributes of IT employees and that future recommendations will need to be more nuanced and will require clarification of the different conditions under which each trait is more important.

The positive finding for Customer Service Orientation is consistent with studies showing a positive relationship between career satisfaction of IT employees and the service dimension of career anchors Service (Jiang and Klein, 1999/2000; Jiang *et al.*, 2001). The importance of customer service as a valued attribute of IT workers is likely to increase in the future given the multiple internal customers that IT must serve, such as marketing and sales departments, and the push for ever-increasing integration of IT with other organizational functions (Lee *et al.*, 1995), as well as the growing use of IT in new marketing and service activities such as personalized marketing, self-service sales, instant product presentation, and real-time customer intelligence (Gogan, 1998). As Ray *et al.* (2005) concluded, for most companies 'quality customer service has emerged

as a strategic imperative, one that is increasingly tied to a firm's IT resources and capabilities' (p. 625).

Regarding the other variables that we found to be positively related to both job and career satisfaction, most have been cited directly or implied in the literature as important for effective performance of IT roles and/or project and corporate success. For example, leadership skills – for which an essential ingredient is assertiveness – have been emphasized by Lee *et al.* (1995) as among the critical skills for the management of IS and technological integration efforts. At the individual level, because more assertive IT workers are more inclined to take the initiative in unstructured situations, speak up and present their views in meetings, and defend their organizational turf, they are more likely to be satisfied on their jobs.

Finally, the importance of Work Drive is often represented in terms such as 'personal motivation' (Todd *et al.*, 1995) as among core KSA's (knowledge, skills, and abilities) for IT employees. Its importance is likely to increase in view of the intensified demands placed on IT systems and personnel mentioned above.

Openness was also significantly (though at a relatively lower level than the other variables considered in this study) related to both job and career satisfaction. Although Openness is not addressed in the career anchors model, and it does not translate to a demonstrable skill, it is publicly recognized as a key attribute for IT employees. To illustrate, in his presidential address to the Association of IT Professionals (AITP), Koscho (2003) stressed the importance of lifelong learning and keeping abreast of changes in the profession as well as changes in society and the world. In fact, Openness is so important for professional IT practice that it is enshrined in two of the AITP's standards of conduct:

- In recognition of my obligation to management I shall: keep my personal knowledge up-to-date and insure that proper expertise is available when needed. (AITP, 2006: para. 2) Q11
- In recognition of my obligation to my employer I shall: make every effort to ensure that I have the most current knowledge and that the proper expertise is available when needed. (AITP, 2006: para. 5) Q12

As the IT field expands and technological changes proliferate, there is likely to be greater demand for IT professionals to be aware of new developments, engage in continuing education and professional growth, experiment with novel work arrangements (e.g., telecommuting, job sharing, and virtual teams), and work with more diverse colleagues in new forms of collaboration such as in ITT offshoring and outsourcing program – all of which may increase the importance of Openness as an important, positive characteristic of IT employees. In fact, it is hard to imagine how IT employees who are closed to new ideas, set in their ways, and resistant to change can function satisfactorily in any IT job, let alone enjoy their work and derive short- or long-term satisfaction from it.

One aspect of the present findings is consistent with the conceptual distinction of job satisfaction as a construct pertaining to a shorter time period than career satisfaction (Lounsbury, 2006). The correlations with personality traits

were, as a group, higher for career satisfaction than job satisfaction. It is also interesting to note that the multiple regression analyses showed that a moderately large amount of the variance in both job and career satisfaction is accounted for by a relatively small number of personality traits (three and four, respectively).

There are several practical and research implications of our study. From a research standpoint, it seems clear that both job and career satisfaction of IT professionals are linked to personality variables. Future research could replicate as well as extend these findings to whether they are moderated as a function of age, gender, number of years of experience in the field, IT sub-specialty, and so forth. That several personality traits account for more than a sixth of variance in job satisfaction and more than a fifth of the variance in career satisfaction, are interesting results in their own right; moreover, they also pose a challenge for future research on factors related to either the job satisfaction or career satisfaction of IT professionals because personality traits are rather stable for adults (Costa and McCrae, 1994) and from a lifespan developmental perspective (e.g., Seifert et al., 2000), they are antecedent to job and career experiences. Thus, for example, research on how factors such as pay, supervision, and other job or organizational characteristics are related to IT job satisfaction should try to demonstrate incremental validity above and beyond that accounted for by personality traits. From a practical perspective, the present findings could be useful for career planning and development programs in general, IT job enrichment efforts, and career and personal counseling programs for IT employees. Additionally, it might be useful to consider incorporating personality measures into pre-employment selection programs for IT positions, especially since other research has shown that personality traits are related to the job performance of IT professionals (Witt and Burke, 2002, 2006) and compendia of empirical studies have shown that personality traits are valid predictors of job performance for many different types of occupations (e.g., Barrick and Mount, 1991; Salgado, 1997; Lounsbury et al., 2004a).

It should be noted that there were several limitations of the present study. Tenure in the IT field was not assessed and distinctions were not made between IT managers and individual contributors. Also, we do not know if the present sample of individuals participating in career management programs is representative of IT professionals employed in different companies, industries, positions, and settings. Moreover, we did not assess changes over time in the personality and satisfaction measures, nor we did look at the predictive validity of personality traits in relation to job and career satisfaction.

Nevertheless, the present study is interesting in that the results are indicative of multiple links between personality traits and both the job and career satisfaction of IT professionals – all of which warrant replication as well as further explanation of why and how these results occur. In part, the present results contravene traditional assumptions about IT work favoring introverts and individuals who prefer to work independently. That moderately substantial amounts of variance in job and career satisfaction can be accounted for by a small number of personality traits also sets a challenge for researchers who wish to show how other

factors such as pay, autonomy, responsibility, and challenge can contribute uniquely to the prediction of job and career satisfaction above and beyond what can be accounted for by antecedent personality traits.

References

- Anderson, J.C. and Gerbing, D.W. (1988). Structural Equation Modeling in Practice: A review and recommended practice, *Psychological Bulletin* 103: 411–423.
- Andrews, F.M. (1974). Social Indicators of Perceived Life Quality, *Social Indicators Research* 1: 279–299.
- Aspinwall, L.G., Richter, L. and Hoffman III, R.R. (2001). Understanding How Optimism Works: An examination of optimists' adaptive moderation of belief and behavior, in E.C. Chang (ed.) *Optimism and Pessimism: Implications for Theory, Research, and Practice*, Washington, D.C.: American Psychological Association, pp. 217–238.
- Barling, J., Kelloway, E.K. and Frone, M.R. (eds.) (2004). *Handbook of Work Stress*, New York: Sage.
- Barrick, M.R. and Mount, M.K. (1991). The Big Five Personality Dimensions and Job Performance: A meta-analysis, *Personnel Psychology* 44: 1–26.
- Bartol, K.M. (1983). Turnover Among DP Personnel: A causal analysis, *Communications of the ACM* 26: 807–811.
- Bartol, K.M. and Martin, D.C. (1982). Managing Information Systems Personnel: A review of the literature and implications, *MIS Quarterly* 6(Special Issue): 49–70.
- Burke, R.J. (2001). Organizational Values, Work Experiences and Satisfaction Among Managerial and Professional Women, *Journal of Management Development* 20(4): 346–354.
- Career Strategists (2006). What We Do, Retrieved, April 20, 2006, <http://www.careerstrategists.net/what.html>.
- Clark, J.G., Walz, D.B. and Wynekoop, J.L. (2003). Identifying Exceptional Application Software Developers: A comparison of students and professionals, *Communications of the Association for Information Systems* 11: 137–154.
- Cohen, J. and Cohen, P. (1983). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, Hillsdale, NJ: Erlbaum.
- Conover, W.J. (1999). *Practical Nonparametric Statistics*, New York: Wiley.
- Cook, T.D. and Campbell, D.T. (1979). *Quasi-Experimentation: Design and Analysis Issues for Field Settings*, Chicago: Rand McNally.
- Costa Jr., P.T. and McCrae, R.R. (1994). Set Like Plaster: Evidence for the stability of adult personality, in R.F. Heatherton, and J.L. Weinberger (eds.) Washington, DC: APA, pp. 21–40. Q13
- Cramer, D. (1993). Tenure, Commitment, and Satisfaction of College Graduates in an Engineering Firm, *Journal of Social Psychology* 133(6): 791–796.
- Crepeau, R.G., Crook, C.W., Goslar, M. and McMurtrey, M.E. (1992). Career Anchors of Information Systems Personnel, *Journal of Management Information Systems* 9: 145–160. Q14
- Davis, J., Miller, G.J. and Russell, A. (2006). *Information Revolution*, New York: Wiley.
- de Raad, B. (2000). *The Big Five Personality Factors (The Psycholexical Approach to Personality)*, Seattle: Hogrefe & Huber.
- DeNeve, K.M. and Cooper, H. (1998). The Happy Personality: A meta-analysis of 137 personality traits and subjective well-being, *Psychological Bulletin* 95: 542–575.
- Gillham, J.E., Reivich, K.J. and Shatte, A.J. (2001). Building Optimism and Preventing Depressive Symptoms in Childhood, in E.C. Chang (ed.) *Optimism & Pessimism*, Washington, DC: American Psychological Association, pp. 301–320.
- Gogan, K. (1998). Build Customer Satisfaction Using Real-Time Intelligence, *Marketing News* 32(11): 13.
- Holland, J.L. (1985). *Making Vocational Choices: A Theory of Vocational Personalities and Work Environments*, Odessa, FL: Psychological Assessment Resources.
- Holland, J.L. (1996). Exploring Careers with a Typology: What we have learned and some new directions, *American Psychologist* 51(4): 397–406.
- Holland, J.L., Gottfredson, G.D. and Baker, H.G. (1990). Validity of Vocational Aspirations and Interest Inventories: Extended, replicated, and reinterpreted, *Journal of Counseling Psychology* 37: 337–342.



- Huang, A. (1998). The Effect of Interpersonal Environments on IS Personnel, *Journal of Computer Information Systems* 38(4): 52–59.
- Huang, A. (2001). Burnout Syndrome Among Information Systems Professionals, *Information Systems Management* 18(2): 15–20.
- Igarria, M., Greenhaus, J.H. and Parasuraman, S. (1991a). Career Orientations of MIS Employees: An empirical analysis, *MIS Quarterly* 15: 151–169.
- Igarria, M., Parasuraman, S. and Badaway, M.K. (1991b). Work Experiences, Job Involvement, and Quality of Work Life Among Information Systems Personnel, *MIS Quarterly* 18: 175–201.
- Institute for Management Excellence (2006). Differences Between ‘Computer’ Folks and the General Population. Retrieved April 14, 2006 from, <http://www.itstime.com/jul2003.htm>.
- ITTraining (2001). Perfecting Project Management, *ITTraining*, November, 42.
- Jepson, K. (2004). Stress and IT, *Credit Union Journal*, September 26, 2005, 14.
- Jiang, J.J. and Klein, G. (1999/2000). Supervisor Support and Career Anchor Impact on the Career Satisfaction of the Entry-Level Information Systems Professional, *Journal of Management Information Systems* 16(3): 219–240.
- Jiang, J.J. and Klein, G. (2002). A Discrepancy Model of Information System Personnel Turnover, *Journal of Management Information Systems* 19(2): 249–272.
- Jiang, J.J., Klein, G. and Ballou, J.L. (2001). The Joint Impact of Internal and External Career Anchors on Entry-Level IS Career Satisfaction, *Information & Management* 39(1): 31–39.
- Judge, T.A., Heller, D. and Mount, M.K. (2002). Five-Factor Model of Personality and Job Satisfaction: A meta-analysis, *Journal of Applied Psychology* 87(3): 530–541.
- Kochanski, J. and Ledford, G. (2001). ‘How to Keep me’ Retaining Technical Professionals, *Research Technology Management* 44(3): 31–38.
- Koscho, G.R. (2003). President’s Message, *Information Executive* 7(2): 1.
- Lee, D.M.S., Trauth, E.M. and Farwell, D. (1995). Critical Skills and Knowledge Requirements of IS Professionals: A joint academic industry investigation, *MIS Quarterly* 19(3): 313–340.
- Lin, Z. and Carley, K.M. (2003). *Designing Stress Resistant Organizations: Computational Theorizing and Crisis Applications*, New York: Springer.
- London, M., Crandall, R. and Seals, G.W. (1977). The Contribution of Job and Leisure Satisfaction to Quality of Life, *Journal of Applied Psychology* 62(3): 328–334.
- Lounsbury, J.W. (2006). Career Satisfaction, in J. Greenhaus and G.A. Callanan (eds.) *Encyclopedia of Career Development*, Thousand Oaks, CA: Sage Reference Publications, pp. 142–146.
- Lounsbury, J.W. and Gibson, L.W. (2006). *Personal Style Inventory: A Work-Based Personality Measurement System*, Knoxville, TN: Resource Associates.
- Lounsbury, J.W., Gibson, L.W. and Hamrick, F.L. (2004a). The Development of a Personological Measure of Work Drive, *Journal of Business and Psychology* 18(4): 347–371.
- Lounsbury, J.W., Gibson, L.W., Steel, R.P., Sundstrom, E.D. and Loveland, J.L. (2004b). An Investigation of Intelligence and Personality in Relation to Career Satisfaction, *Personality and Individual Differences* 37(1): 181–189.
- Lounsbury, J.W., Gibson, L.W., Sundstrom, E., Wilburn, D. and Loveland, J. (2003a). An Empirical Investigation of the Proposition that ‘School Is Work’. A Comparison of Personality-Performance Correlations in School and Work Settings, *Journal of Education and Work* 17: 119–131.
- Lounsbury, J.W., Loveland, J.M., Sundstrom, E., Gibson, L.W., Drost, A.W. and Hamrick, F. (2003b). An Investigation of Personality Traits in Relation to Career Satisfaction, *Journal of Career Assessment* 11(3): 287–307.
- Lounsbury, J.W., Park, S.H., Sundstrom, E., Williamson, J. and Pemberton, A. (2004c). Personality, Career Satisfaction, and Life Satisfaction: Test of a directional model, *Journal of Career Assessment* 12: 395–406.
- McCrae, R.R. and Costa, P.T. (1997). Personality Trait Structure as a Human Universal, *American Psychologist* 52: 509–516.
- McCrae, R.R. and Costa, P.T. (2003). *Personality in Adulthood: A Five-Factor Theory Perspective*, 2nd edn. New York, NY: Guilford Press.
- Moore, J.E. (2000). One Road to Turnover: An examination of work exhaustion in technology professionals, *MIS Quarterly* 24(1): 141–168.
- Moore, J.E. and Burke, L. (2002). How to Turn Around ‘Turnover Culture’ in IT, *Communications of the ACM* 45(2): 73–78.
- Myers, I.B. and McCaulley, M.H. (1985). *Manual: A Guide to the Development and use of the Myers-Briggs Type Indicator*, Palo Alto, CA: Consulting Psychologists Press.
- O*NET (2006). Occupational Information Network online. Retrieved April 16, 2006 from, <http://online.onetcenter.org/find/>.
- Pemberton, A.E., Pemberton, J.M., Williamson, J.M. and Lounsbury, J.W. (2005). RIM Professionals: A distinct personality? *Information Management Journal* 39(5): 54–60.
- Pervin, L.A. and John, O.P. (1997). *Personality: Theory and Research*, New York: Wiley.
- Rambur, B., McIntosh, B., Palumbo, M.V. and Reinier, K. (2005). Education as a Determinant of Career Retention and Job Satisfaction Among Registered Nurses, *Journal of Nursing Scholarship* 37: 185–192.
- Ray, G., Muhanna, W.A. and Barney, J.B. (2005). Information Technology and the Performance of the Customer Service Process: A resource-based analysis, *MIS Quarterly* 29(4): 625–651.
- Salgado, J.F. (1997). The Five Factor Model of Personality and Job Performance in the European Community, *Journal of Applied Psychology* 82: 607–620.
- Savvas, A. (2004). Work Stress at Record High, *Computer Weekly*, September 7, 2004, 4.
- Scheier, M.F., Carver, C.S. and Bridges, M.W. (2001). Optimism, Pessimism, and Psychological Well-Being, in E.C. Chang (ed.) *Optimism & Pessimism: Implications for Theory, Research, and Practice*, Washington, DC: American Psychological Association.
- Schein, E.H. (1978). *Career Dynamics: Matching Individual and Organizational Needs*, Boston: Addison Wesley.
- Schneider, K. (2002). Non-Technical Factors are Key to Ensuring Project Success, *Computer Weekly*, February 28, 2002, 40.
- Seifert, K.L., Hoffnung, R.J. and Hoffnung, M. (2000). *Lifespan Development*, New York: Houghton Mifflin.
- Seligman, M.E.P. (1990). *Learned Optimism*, New York: Pocket Books.
- Smits, S.J., McLean, E.R. and Tanner, J. (1993). Managing High-Achieving IS Professionals, *Journal of Management Information Systems* 9: 103–120.
- Storey, J.A. (2000). ‘Fracture lines’ in the Career Environment, in A. Collin and R.A. Young (eds.) *The Future of Career*, Cambridge: Cambridge University.
- Tesch, D., Jiang, J.J. and Klein, G. (2003). The Impact of Information System Personnel Skill Discrepancies on Stakeholder Satisfaction, *Decision Sciences* 34: 107–129.
- Todd, P.A., McKeen, J.D. and Gallupe, R.B. (1995). The Evolution of IS Job Skills: A content analysis of IS job requirements from 1970–1990, *MIS Quarterly* 19(1): 1–27.
- Watson, H., Young, D., Miranda, S., Robichaux, B. and Seerley, R. (1990). Requisite Skills for New MIS Hires, *Data Base* 21: 20–29.
- Wetherbe, J.C., Wetherbe, B. and Frolick, M. (1999). Mass Customization and Reward Systems: Different strokes for different folks, *Journal of Computer Information Systems* 39: 29–37.
- Whitaker, B. (1999). What Went Wrong? Unsuccessful Information Technology Projects, *Information Management and Computer Security* 7(1): 23–29.
- Williamson, J.W., Pemberton, A.E. and Lounsbury, J.W. (2005). An Investigation of Career and Job Satisfaction in Relation to Personality Traits of Information Professionals, *Library Quarterly* 75(2): 122–141.
- Witt, L.A. and Burke, L.A. (2002). Selecting High-Performing IT Professionals, *Journal of End User Computing* 14(4): 37–50.
- Witt, L.A. and Burke, L.A. (2006). Using Cognitive Ability and Personality to Select Information Technology Professions. Idea Group, Inc. Retrieved April 16, 2006 from, <http://idea-group.com/downloads/excerpts/2003/1591400651.pdf>.
- United States Department of Labor Employment and Training Administration (1991). *Dictionary of Occupational Titles*, Indianapolis, IN: JIST Works.

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