



Image designed by Miracle Riese

KEEPING THE TALENT: UNDERSTANDING THE NEEDS OF ENGINEERS AND SCIENTISTS IN THE DEFENSE ACQUISITION WORKFORCE

Alan K. Jenkins

The need to focus on retention efforts for acquisition professionals, specifically engineers and scientists, is becoming more evident with the aging of the general civil service population, decline in domestic engineer and scientist production, and increase in worldwide demand for those professional groups. Using a framework that integrates Maslow's (1954) hierarchy of needs, McGregor's (1960) Theories X and Y, and a three-part organizational commitment model of Meyer and Allen (1991), recent data on engineers and scientists in the acquisition community were examined. Findings include the motivating factors for organizational commitment were meaning obtained from one's job and growth and development opportunities. Retention efforts should focus on these areas rather than on areas where the government is less capable.



The United States federal government is like most organizations with respect to the need for talented personnel. The ability to attract and retain talent along with increased competition for talented personnel is also common to most organizations. However, the government has a particular issue not faced by other large organizations in that the majority of the federal workforce can retire within the next decade (Thompson, 2008; Zeller, 2004). To compound the issue, part of the federal workforce, *engineers and scientists*, will face an increasing demand for their talents in the coming years. Clearly, those leading and managing this professional group must understand the factors that retain engineers and scientists within their respective organizations. This article addresses the background of the potential shortage of engineers and scientists, a framework for *workplace satisfac-*

tion and organizational commitment, factors affecting workplace satisfaction and organizational commitment, findings from a recent research effort on engineers and scientists in the acquisition community, and implications and recommendations for an organization's leadership with respect to retaining its engineering and science professionals.

BACKGROUND

Albano and Leaver (2004), Wilson (2003), Thompson (2004), and Zeller (2004) among others have noted the potential crisis of massive departures by the federal workforce. However, Shoop (2005) noted that the government would not suffer from an organization-wide crisis but from hundreds of smaller crises from the loss of personnel. These crises include departures to pursue careers with other public or private industry organizations, and retirement from the workforce completely.

Within the acquisition community, engineers and scientists can be found throughout most disciplines. Doyle and Colvard (2006) highlighted the need for engineers and scientists within the U.S. Navy. Like many of the armed services, the civilian engineers and scientists working for the Navy bridge the gap between the Services' mission and technology. With respect to external competitors, the federal government will have difficulty in keeping and replacing its engineering and science workforce (Gropp, 2004).

When a person departs a team or organization, there are indirect and direct costs associated with the loss. Specifically for technical and knowledge workers like engineers and scientists, a departure signifies a loss of expertise and capability (Stovel & Bontis, 2002) because the knowledge worker keeps the means of production rather than leaving it at the former workplace. Other indirect costs include the lower morale and lower customer satisfaction (Kaye & Jordan-Evans, 2003).

Direct costs are more easily calculated. To replace an employee, the organization must spend, in terms of work-year costs, between ½ work-years (Earle, 2003; Hillmer, Hillmer, & McRoberts, 2004; Ramlall, 2004) to 3 work-years (Earle, 2003; O'Leary, 2003). Recruiting, training, certification, and recapturing productivity are a few of the areas where the organization incurs costs. If the replacement requires specialized training, warrants, or security clearances, the costs could increase beyond 3 work-years.

The loss of engineering and science personnel within the acquisition community poses a difficult problem for its management. Supply of engineers is lagging demand (Doig & Beck, 2005). In addition, the United States is producing fewer domestic engineers and scientists each year (Butz et al., 2003; Lavigna & Hays, 2004). To compound the difficulty of a decreasing supply, demand for engineers and scientists is increasing worldwide (Brown, 2004; Manning, Masini, & Lewin, 2008). How the organization will address increased demand and decreased supply will determine whether its personnel remain with the organization or depart. Understanding what keeps personnel with an organization may be the first step to finding viable options for *retention* efforts.

FRAMEWORK FOR WORKPLACE SATISFACTION AND ORGANIZATIONAL COMMITMENT

Two theories of workplace satisfaction and motivation that continue to be relevant for the acquisition community are Maslow's hierarchy of needs and McGregor's Theory X and Theory Y (Jenkins, 2008). Meyer and Allen's (1991) three-part organizational commitment connects the workplace factors such as pay and benefits to the level and type of commitment an employee has for his or her organization. The framework for understanding workplace satisfaction and organizational commitment integrates McGregor's Theories X and Y, Maslow's hierarchy of needs, and Meyer and Allen's three-part organizational commitment theory.

MASLOW

In 1954, Maslow developed a hierarchy of needs to explain a person's motivation. The base level related to physiological needs. Once the physiological needs were met, the next level of security needs could then be pursued. Two subsequent levels of community and esteem needs had to be sequentially met before the top level of self-actualization needs could be met (Maslow, 1954). People have a need to continue moving up to higher levels of motivation (Maslow, 1998).

In the workplace, Maslow's hierarchy can be translated into job-related factors. Table 1 details the workplace needs and motivational order. The higher order needs cannot be met until the lower order needs have been satisfied. If the employee is operating at the community needs level and a perceived threat to his or her income emerges, the employee moves down to the security needs level, meets it, and then works on satisfying the next higher level.

TABLE 1. WORKPLACE INTERPRETATION OF MASLOW'S HIERARCHY OF NEEDS*

Motivational Order	Maslow's Hierarchy of Needs	Workplace Interpretation of Maslow's Hierarchy of Needs
Highest	Self-Actualization Needs	Meaning, Innovation
	Esteem Needs	Position, Rank, Respect
	Community Needs	Teams, Co-Workers, Professional Organizations
	Security Needs	Income Security, Freedom from Fear, Safe Working Conditions
Lowest	Physiological Needs	Wages, Benefits

*Jenkins, 2008; see also Winder, 2003.

MCGREGOR

McGregor (1960) used Maslow as a foundation for understanding how managers view their employees. Theory X states that employees do not want to work and

must be forced into performing; they prefer direction as a way to avoid responsibility (McGregor). Theory Y states that employees like to work and do not have to be forced in order to perform; they will take responsibility when the work environment permits (McGregor). Theory X factors are related to physiological and security needs,

Increasing motivation increases productivity.

and Theory Y factors are related to community, esteem, and self-actualization needs. Of note is that a manager must meet the needs of the employees at the lower levels before being able to improve the performance of his or her employees, regardless to which of McGregor's theories he or she may subscribe. Increasing motivation increases productivity (Halepota, 2005) and the likelihood that an employee will remain with his or her organization (O'Leary, 2003; Ramlall, 2004).

ORGANIZATIONAL COMMITMENT

How an employee feels toward his or her organization and continuing in that organization is organizational commitment (Meyer & Allen, 1991). Meyer and Allen separated organizational commitment into three parts, which describe three distinct aspects of commitment: affective, normative, and continuance commitment. The first is affective commitment and is perhaps the most common interpretation of organizational commitment.

Affective commitment refers to the desire of an employee to continue working with his or her specific organization (Meyer & Allen, 1991) and operates at the highest order of an individual's needs. An employee fulfills self-actualization and esteem needs through belonging to a specific organization. Belonging to a community or identification with a community operates on needs that are more normative.

Normative commitment refers to the desire or perceived obligation of an employee to remain with an organization (Meyer & Allen, 1991). For example, a summer-hire student may have a sense of obligation to work for his or her employer after graduation based upon the opportunities provided to him or her as a student. The sense of obligation can extend to a type of organization. For example, a person may feel the need to support national defense and choose that industry through public or private service. Loyalty to a particular team or effort also is a part of normative commitment.

Continuance commitment refers primarily to weighing the monetary cost of remaining with the organization (Meyer & Allen, 1991). Options to pursue employment with other organizations and economic stability affect this type of commitment. For employees whose skills are in demand outside the boundaries of the organization, continuance commitment would be low. The figure shown here depicts a conceptual relationship of Maslow's hierarchy of needs, McGregor's Theories X and Y, and the three-part organizational commitment theory of Meyer and Allen.

FIGURE. CONCEPTUAL RELATIONSHIP OF MASLOW'S HIERARCHY, MCGREGOR'S THEORY X AND Y, AND MEYER & ALLEN'S ORGANIZATIONAL COMMITMENT COMPONENTS*



*From *Satisfaction and Organizational Commitment of Civilian Engineers and Scientists in United States Naval Acquisition* (p. 37), by A.K. Jenkins. Unpublished doctoral dissertation (publication in work), University of Phoenix, Phoenix, AZ (© 2008). Reprinted with permission.

FACTORS AFFECTING WORKPLACE SATISFACTION AND ORGANIZATIONAL COMMITMENT

A search of recent literature was conducted to determine which factors were important to engineers and scientists. Literature from previous research efforts was also reviewed. The findings from this search and reviews provided factors correlating to workplace satisfaction and organizational commitment.

Relevance and meaning of job refers to the intrinsic value one places on his or her tasks with respect to contribution to the organization or its mission.

The factors were gathered from research efforts published in numerous scholarly publications and dissertations. Consequently, the exact description of the factors used varied in the research. The factors were grouped into like categories. For example, pay and wages were grouped into a single factor—pay. The six factors significant to civilian engineers and scientists were: 1) pay and benefits, 2) growth and development opportunities, 3) relevance or meaning of job, 4) supervision, 5) feelings towards co-workers, and 6) job security.

Most of the significant factors are self-explanatory and are listed in Table 2 with several of the originating sources. The growth and development opportunities factor refers to an organization's culture towards training, training opportunities, work roles and tasks that increase in complexity, increased responsibility, and advancement in rank. Relevance and meaning of job refers to the intrinsic value one places on his or her tasks with respect to contribution to the organization or its mission. This factor is the one that is in most control of the employee and the manager. It is also the factor that relates most closely to self-actualization.

TABLE 2. FACTORS CORRELATING TO WORKPLACE SATISFACTION AND ORGANIZATIONAL COMMITMENT WITH THE CORRESPONDING SOURCE CITATIONS

Factors	Source Citations
Pay and Benefits	Brown & Yoshioka, 2003; DeYoung, 2003; Doig & Beck, 2005; Forbes & Domm, 2004; Magee, 2005; O'Leary, 2003; United States Office of Personnel Management (OPM), 2005
Growth and Development Opportunities	Beck, 2002; Brown, 2004; Brown & Yoshioka, 2003; Egan, Yang, & Bartlett, 2004; Forbes & Domm, 2004; Gould-Williams, 2004; Kanfer & Ackerman, 2004; Kaye & Jordan-Evans, 2003; Magee, 2005; O'Leary, 2003; OPM, 2005
Relevance or Meaning of Job	Brown & Yoshioka, 2003; Doig & Beck, 2005; Forbes & Domm, 2004; O'Leary, 2003; Sousa-Poza & Henneberger, 2004; Wilson, 2003
Supervision	Beck, 2002; Gould-Williams, 2004; Ito & Brotheridge, 2005; Joiner, Bartram, & Garreffa, 2004; Kaye & Jordan-Evans, 2003; Poon, 2004; Sutton & Griffin, 2004
Feelings Towards Co-Workers	Doig & Beck, 2002; Morrison, 2004; O'Leary, 2003; Sousa-Poza & Henneberger, 2004
Job Security	Beck, 2002; Doig & Beck, 2005; O'Leary, 2003; Sousa-Poza & Henneberger, 2004

RECENT RESEARCH FINDINGS

In October 2007, engineers and scientists employed in naval acquisition at a single facility in the southeastern United States were surveyed using the framework depicted in the figure on factors affecting workplace satisfaction and organizational commitment. The purpose was in part to determine which factors correlated to workplace satisfaction and organizational commitment for naval acquisition professionals. Two instruments were used to collect quantitative data on the factors listed in Table 2: the Job Diagnostic Survey (Hackman & Oldham, 1980) and the Organizational Commitment Survey (Meyer & Allen, 2004). Each instrument has been proven valid through previous research. The reliability of the data collected was tested by measuring the Cronbach alpha coefficient. The closer the coefficient is to 1.0, the more reli-

able the study. Coefficients for workplace satisfaction, affective commitment, normative commitment, continuance commitment, and the factors listed in Table 2 ranged from 0.80 to 0.93, indicating an acceptable level of reliability to perform correlational analyses (Jenkins, 2008).

A multivariate analysis was performed on the data to determine if the correlations noted in the univariate analyses existed when considering the entire set of factors. If the absolute value of the correlation coefficient ranged between 0.0 and 0.2, then no statistically relevant relationship exists; from 0.21 to 0.35, then a weak relationship exists; from 0.36 to 0.65, a moderate relationship exists; from 0.66 to 0.8, a strong relationship exists; and from 0.81 to 1.0, a very strong relationship exists (Creswell, 2002). Table 3 lists the factors and the relative correlation.

TABLE 3. FACTORS AND CORRELATION TO WORKPLACE SATISFACTION AND ORGANIZATIONAL COMMITMENT*

Factors	Correlation
Pay and Benefits	Normative Commitment—weak positive
Growth and Development Opportunities	Workplace Satisfaction—weak positive, Continuance Commitment—moderate negative
Relevance or Meaning of Job	Workplace Satisfaction—moderate positive, Affective Commitment—moderate positive, Normative Commitment—very strong positive
Supervision	None
Feelings Towards Co-Workers	Affective Commitment—moderate positive, Normative Commitment—moderate positive
Job Security	None
Workplace Satisfaction	Affective Commitment—moderate positive, Normative Commitment—moderate positive, Continuance Commitment—weak negative

*Jenkins, 2008

A positive correlation indicates a direct relationship, and a negative correlation indicates an inverse relationship. The correlations listed are significant at least at the 0.05 level of confidence. Note that supervision had a correlation smaller than 0.20 and job security was not significant at the 0.05 level of confidence.

IMPLICATIONS AND RECOMMENDATIONS FOR MANAGEMENT

The most significant implication for management is evidenced by the positive correlations of affective commitment and normative commitment combined with the negative correlation of continuance commitment. The combination of correlations indicates that the workforce wants to work for the organization and derives meaning from their jobs. Factors of meaning and growth are more important to the engineering and science workforce than that of pay—assuming that pay needs continue to be adequately met.

Meaning had the highest correlation while pay had the lowest level of correlation. Engineers and scientists placed a greater importance on value derived from their jobs rather than the monetary rewards. While pay was a factor, the level of correlation combined with the levels of the remaining factors indicates the amount of pay is adequate to meet the needs of the workforce. The low importance of pay to engineers and scientists has been noted in other research (O'Leary, 2003; Pfeffer, 2005; Rynes, Gerhart, & Minette, 2004; Takada, 2003), and less tangible factors may have a greater level of importance on workplace satisfaction and organizational commitment (see also Beck, 2002; O'Leary, 2003; Ready, Hill, & Conger, 2008).

The lack of statistically significant correlations to job security indicates it is not a relevant factor with the workforce. Either the perceived job security is high enough to not be in question or job security is not considered important to the workforce. Regardless of the reason, basing retention efforts on job security considerations may provide little if any return on the investment.

Each time management implements an initiative or change, it must be careful of unintended consequences (Grant, Christianson, & Price, 2007). Focusing retention efforts on pay and monetary rewards will tend to push employees into the lower and less motivating levels of Maslow's hierarchy. A monetary focus also operates on areas that have less value to engineers and scientists than other areas such as meaning and growth opportunities. If the organization attracts an employee solely through continuance commitment, it must continue to provide the monetary incentive in order to retain the employee. However, the government is not competitive in the pay arena when compared to private industry organizations (Trahan, 2008). Unless this can be overcome, the government will be perpetually competing in an area where it will repeatedly lose.

Where the government has an edge is in the missions it performs. The greatest gains with respect to workplace satisfaction and organizational commitment can be made by increasing the ability and understanding of the employee's effect in accomplishing the organization's mission. The closer the employee is to the mission, the greater the personal difference can be attributed to mission success. When an employee can understand how his or her efforts have a direct influence on the mission and realizes that influence, he or she has a better opportunity to create value from their work.

Some organizations have a certain cache upon which to capitalize. For example, the U.S. Navy can project power to any point on the globe, and the Department of Homeland Security is charged with protecting the United States respectively. Each organization can use its mission and stature as a selling point to attract and retain talent by connecting the employee's actions to being able to project power or protect the United States. Management's responsibility then is to make and keep the connections. As the mission or tasks evolve, management must make the necessary changes to ensure that the links between the employee's actions and mission success are kept strong. In other words, the organization should build upon its strengths when seeking to retain its personnel.

Encouraging growth in the workforce is another area where organizations can make gains on its investments. Rather than generic growth opportunities that tend to

lower workplace satisfaction, the organization should provide options that are aligned with the individual employee and the organization's mission. Caution must be extended to an organization wanting to limit the skill set of an individual to prevent him or her from easily transferring to another organization. While such limiting will hamper the ability to move within or between organizations, it also lowers job satisfaction. Increasing growth opportunities also increases workplace satisfaction. Employees that are more satisfied tend to be more committed to the organization and remain with the organization.

Future research efforts on retention include performing similar research on other professional communities. The acquisition workforce contains a number of professions, and potential concerns may exist that are similar to the ones with engineers and scientists. When other professions comprise the core group of an organization, the need to assess the risk of talent loss is vital. An additional area for future research is to determine if new factors are emerging that are important to the workforce with respect to workplace satisfaction and organizational commitment.

CONCLUSION

Thompson (2008) noted the importance of addressing a single issue before moving on to the next. Retaining talent should be taken in such a series of steps. Rather than vying for talent from a point of weakness, the acquisition community should focus its efforts in those areas in which it is strong. Instead of highlighting monetary benefits, mission and meaning should be the basis for competition. Specifically, organizations should concentrate on improving the connection between the individual worker and the accomplishment of its mission. Organizations should also provide growth and development opportunities tailored to the individual and ones that align with its mission. The acquisition community can be a strong competitor in the war for talent—as long as it understands on which battlefield it must compete.

Keywords:

Federal Government hiring, retention; workplace satisfaction; organizational commitment; government scientists and engineers



Dr. Alan K. Jenkins is the deputy program manager for test and evaluation for PMA226 and the lead test engineer for the H-46 aircraft at HX-21 at the Naval Air Warfare Center in Patuxent River Naval Air Station, Maryland. He holds a Bachelor's in Electrical Engineering from Auburn University, a Master's of Science in Applied Science from the Naval Postgraduate School, and a Doctor of Management from the University of Phoenix.

(E-mail address: al@claymore-flats.com)

AUTHOR BIOGRAPHY

REFERENCES

- Albano, G. L., & Leaver, C. (2004). Transparency, recruitment and retention in the public sector. Paper presented at Essex IFS Inland Revenue Warwick, Public Economics Weekend 2004, Essex, United Kingdom, December 9–10, 2004, 1–36. Retrieved April 30, 2005, from <http://else.econ.ucl.ac.uk/papers/albano/trans.pdf>
- Beck, S. E. (2002). Civil Service engineers after the Cold War: An examination of job satisfaction factors. (Doctoral Dissertation, Walden University, 2002). *Dissertation Abstract International*, 63(04), 1432. (UMI No. 3049884). Retrieved May 15, 2005, from ProQuest Digital Dissertations database.
- Brown, A. (2004). Engineering identities. *Career Development International*, 9(3), 245–273.
- Butz, W. P., Bloom, G. A., Gross, M. E., Kelly, T. K., Kofner, A., & Rippen, H. E. (2003). *Is there a shortage of scientists and engineers? How would we know?* (Issue paper No. 241). Retrieved May 12, 2005, from <http://www.rand.org>
- Creswell, J. W. (2002). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Upper Saddle River, NJ: Pearson.
- Doig, K., & Beck, S. (2005, Winter). Factors contributing to the retention of clinical laboratory personnel. *Clinical Laboratory Science*, 18(1), 16–27.
- Doyle, A. J., & Colvard, J. E. (2006). We need scientists-engineers more than ever. *Proceedings*, 132(2), 27–29.
- Earle, H. A. (2003). Building a workplace of choice: Using the work environment to attract and retain top talent. *Journal of Facilities Management*, 2, 244–257.
- Grant, A. M., Christianson, M. K., & Price, R. H. (2007). Happiness, health, or relationships? Managerial practices and employee well-being tradeoffs. *Academy of Management Perspectives*, 21(3), 51–63.
- Gropp, R. E. (2004, January 1). Developing the federal natural resource workforce. *BioScience*, 54(1), 16.
- Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.
- Halepota, H. A. (2005). Motivational theories and their application in construction. *Cost Engineering*, 47(3), 14–18.
- Hillmer, S., Hillmer, B., & McRoberts, G. (2004). The real costs of turnover: Lessons from a call center. *HR Human Resource Planning*, 27(3), 34–41.
- Jenkins, A.K. (2008). Satisfaction and organizational commitment of civilian engineers and scientists in United States Naval acquisition. Dissertation Abstracts

- International, 69(10). (UMI Number 3334980). NB: DAI has not yet assigned a page number.
- Joiner, T. A., Bartram, T., & Garreffa, T. (2004, September). The effects of mentoring on perceived career success, commitment, and turnover intentions. *Journal of American Academy of Business, Cambridge*, 5(1/2), 164–170.
- Kaye, B., & Jordan-Evans, S. (2003). How to retain high-performance employees. In E. Beich (Vol. Ed.). *The 2003 Annual: Vol. 2. Consulting* (41st ed., pp. 291–298). Retrieved December 31, 2008, from <http://www.careersystemsintl.com/PDF%20Files/How%20to%20Retain%20High-Performance%20Employees.pdf>
- Lavigna, R. J., & Hays, S. W. (2004, Fall). Recruitment and selection of public workers: An international compendium of modern trends and practices. *Public Personnel Management*, 33(3), 237–253.
- Manning, S., Masini, S., & Lewin, A.Y. (2008). A dynamic perspective on next-generation offshoring: The global sourcing of science and engineering talent. *The Academy of Management Perspectives*, 27(3), 35–54.
- Maslow, A. H. (1954). *Motivation and personality*. New York: Harper and Row.
- Maslow, A. H. (1998). *Maslow on management*. New York: John Wiley and Sons.
- McGregor, D. (1960). *The human side of enterprise*. New York: McGraw-Hill.
- Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1, 61–89.
- Meyer, J. P., & Allen, N. J. (2004). *TCM employee commitment survey academic users guide 2004*. London, Ontario, Canada: The University of Western Ontario, Department of Psychology.
- O’Leary, S. P. (2003). Organizational commitment and technical workers in a Department of Defense activity center: A correlational study. (Doctoral Dissertation, University of Phoenix, 2004). *Dissertation Abstraction International*, 64(11), 4122. (UMI No. 3112716). Retrieved February 2, 2005, from ProQuest Digital Dissertations and Theses database.
- Pfeffer, J. (2005). Producing sustainable competitive advantage through the effective management of people. *The Academy of Management Executive*, 19(4), 95–106.
- Ramlall, S. (2004, September). A review of employee motivation theories and their implications for employee retention within organizations. *Journal of American Academy of Business*, 5(1/2), 52–63.
- Ready, D.A., Hill, L.A., & Conger, J.A. (2008). Winning the race for talent in emerging markets. *Harvard Business Review*, 86(11), 63–70.

- Rynes, S. L., Gerhart, B., & Minette, K. A. (2004, Winter). The importance of pay in employee motivation: Discrepancies between what people say and what they do. *Human Resource Management, 43*(4), 381–394.
- Shoop, T. (2005). Do the retirement wave. *Government Executive, 37*(21), 94.
- Stovel, M., & Bontis, N. (2002). Voluntary turnover: Knowledge management friend or foe. *Journal of Intellectual Capital, 3*(3), 303–322.
- Takada, P. W. (2003). The relationship between organization culture and satisfaction of knowledge workers in technology-driven organizations. (Doctoral Dissertation, The University of Alabama in Huntsville, 2003). *Dissertation Abstracts International, 64*, 4556B. Retrieved April 28, 2006, from ProQuest Dissertations and Theses database.
- Thompson, F.W. (2008). Looking ahead—A human resource strategy. *Public Manager, 36*(4), 14–17.
- Trahant, B. (2008). Recruiting and engaging the federal workforce. *Public Manager, 37*(1), 55–61.
- Wilson, P. A. (2003, January). Politics, values, and commitment: An innovative research design to operationalize and measure public service motives. *International Journal of Public Administration, 26*(2), 157–172.
- Zeller, S. (2004, February). The state of the Civil Service [Electronic version]. *Government Executive, 36*(3), 25–32.

BIBLIOGRAPHY

- Brown, W. A., & Yoshioka, C. A. (2003, Fall). Mission attachment and satisfaction as factors in employee retention. *Nonprofit Management & Leadership*, 14(1), 5–18.
- DeYoung, D. J. (2003). The silence of the labs. *Defense Horizons*, 21. Retrieved December 31, 2008, from <http://www.fas.org/man/eprint/deyoung.pdf>
- Egan, T. M., Yang, B., & Bartlett, K. R. (2004, Fall). The effects of organizational learning culture and job satisfaction on motivation to transfer learning and turnover intention. *Human Resource Development Quarterly*, 15(3), 279–301.
- Forbes, J. B., & Domm, D. R. (2004). Creativity and productivity: Resolving the conflict. *SAM Advanced Management Journal*, 69(2), 4–27.
- Gould-Williams, J. (2004, March 1). The effects of ‘high commitment’ HRM practices on employee attitude: The views of public sector workers. *Public Administration*, 82(1), 63–81.
- Ito, J. K., & Brotheridge, C. M. (2005, Spring). Does supporting employees’ career adaptability lead to commitment, turnover, or both? *Human Resource Management*, 44(1), 5–19.
- Kanfer, R., & Ackerman, P. L. (2004). Aging, adult development, and work motivation. *Academy of Management Review*, 29, 440–458.
- Magee, M. P. (2005). *The class of 9/11: Bringing in a new generation of practical patriots into public service* (pp. 1–12). Washington, DC: Partnership for the Public Service.
- Morrison, R. (2004, November). Informal relationships in the workplace: Associations with job satisfaction, organisational commitment and turnover intentions. *New Zealand Journal of Psychology*, 33(3), 114–128.
- Poon, J. M. L. (2004). Effects of performance appraisal politics on job satisfaction and turnover intention. *Personnel Review*, 33(3), 322–334.
- Sousa-Poza, A., & Henneberger, F. (2004, March). Analyzing job mobility with job turnover intentions: An international comparative study. *Journal of Economic Issues*, 38(1), 113–136.
- Sutton, G., & Griffin, M. A. (2004, December). Integrating expectations, experiences, and psychological contract violations: A longitudinal study of new professionals. *Journal of Occupational and Organizational Psychology*, 77(4), 493–514.
- U.S. Office of Personnel Management (2005). *What do federal employees say? Results from the 2004 federal human capital survey*. Retrieved December 31, 2008, from http://hr.commerce.gov/s/groups/public/@doc/@cfoasa/@ohrm/documents/content/dev01_006127.pdf

Leadership and Cultural **Change:**



LONG-TERM WORKFORCE RETENTION
Efforts and Strategies

Image designed by Harambee Dennis