



MAKING THE RIGHT CONNECTIONS

Targeting the Best Competencies for Training



A Report to the President and the Congress of the United States
by the U.S. Merit Systems Protection Board

February 2011

THE CHAIRMAN



U.S. MERIT SYSTEMS PROTECTION BOARD
1615 M Street, NW
Washington, DC 20419-0001

The President
President of the Senate
Speaker of the House of Representatives

Dear Sirs:

In accordance with the requirements of 5 U.S.C. 1204(a)(3), it is my honor to submit this Merit Systems Protection Board (MSPB) report, Making the Right Connections: Targeting the Best Competencies for Training. The MSPB recognizes that some abilities needed for Federal jobs may be inherently more difficult to learn than others. Research on mental abilities distinguishes among those that can be developed through training, those that are unresponsive to training, and those that are moderately responsive. This dimension is known as “trainability.” The purpose of this report is to contrast employee perceptions of the trainability of job-relevant abilities with research findings about the actual trainability of these abilities.

The MSPB’s goal is to help agencies use training resources to enhance individual and organizational performance by highlighting abilities for which training may be less beneficial than other organizational improvement strategies. These findings should increase the efficient management of the workforce by reducing the number of futile and repeated trainings, and by encouraging employees to pursue training in areas they believe to be useful. The findings should also increase the effectiveness of employee selection by encouraging agencies to target critical abilities that are less responsive to training, ensuring that persons with those abilities are hired into the workforce. Finally, the findings should educate agencies, supervisors, and employees about appropriate training strategies and access to training opportunities.

I believe you will find this report useful as you consider the most effective ways to manage the Federal workforce to best accomplish its mission.

Respectfully,

Susan Tsui Grundmann

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EXECUTIVE SUMMARY

This research was conducted as part of the Merit System Protection Board's (MSPB's) responsibility to study the Federal workforce. The purpose of this report is to contrast employee perceptions of the trainability of job-relevant competencies with research findings about the actual trainability of these competencies.¹ The results should help agencies identify and avoid training which targets less trainable competencies and is therefore less likely to be successful. This may help make more effective use of the increasingly scarce Federal training dollar.

The MSPB is studying training because the Merit System Principles state that training should improve organizational and individual performance and the Federal workforce should be managed efficiently and effectively, selected and promoted according to their job-related abilities, and treated fairly and equitably. At the MSPB we take a strategic view of training, seeking to identify Governmentwide patterns to inform agency decisions about training.

Methodology

Two primary methods were used to examine training needs and training experiences of Federal employees. The first was a literature review of competency models and research related to the trainability of different types of knowledge, skills, and abilities. The second was survey research centering on three open-ended questions placed on two Governmentwide surveys: the Merit Principles Survey 2005 and the Merit Principles Survey 2007. These open-ended questions were developed to capture information about training needs, job requirements, and training courses attended.

Findings

A review of the professional literature on competencies and human mental abilities reveals that some competencies needed by Federal employees may be more responsive to training than others. On the basis of this review, we created a six-category classification system for responses to questions about training needs, training attended, and job qualifications. This taxonomy includes Knowledge competencies, which are highly trainable; Language, Social, and Reasoning competencies, which are moderately

¹ "Competencies" are specially-defined ways of looking at employees' abilities to do work. They are defined in relation to broad, well-understood human abilities. Each general competency enables employees to perform a wide range of more narrowly-defined job tasks. Competencies for each job are identified so that each one relates to superior performance on that job. These characteristics make competencies a useful language for examining the job-related abilities that employees may or may not develop through training. Research on competencies and the mental abilities to which they are related distinguishes among competencies that can be developed through training, those that are unresponsive to training, and those that are moderately responsive. We will refer to this dimension as competency "trainability."

trainable; and Motivation and Mental Style competencies, which are less trainable. The survey data collected indicate that Federal employee attitudes generally correspond with the research literature. However, a significant number of employees may avoid training that would help them or seek training that might prove to be frustrating and unsuccessful because of misperceptions about the trainability of various competencies.

To examine Federal employees' training needs and training experiences through the lens of which competencies are more trainable or less trainable, we included several questions about individual training needs on the MPS 2005. Our analysis of the survey results indicates that:

1. About forty percent of employees reported that they needed training for highly trainable competencies; fifty-seven percent sought training for moderately trainable competencies; and only three percent targeted less trainable competencies.

Despite the relatively low percentage of Federal employees attending training for less trainable competencies, it is important to examine this issue. In a Federal workforce of nearly two million employees, many of whom seek more than one training experience each year, this relatively small percentage represents tens of thousands of instances of training. Identifying the factors associated with employee decisions to attend training that is less likely to be productive may help agency decision-makers expend fewer resources on unproductive training.

2. Employees who engage in formal career development planning are less likely to target less trainable competencies when they seek training. However, fewer than half of Federal employees engage in such career development planning.
3. Strengthening use of training pretests and other screening can reduce frustration and wasted resources that result when employees seek training that is unlikely to be successful because they lack prerequisite learning or ability.
4. These issues are complicated by beliefs held by many that most abilities can be gained or improved through training.

We used the results from the MPS 2007 to examine the training classes Federal employees attend and whether they target more trainable or less trainable competencies. The MPS 2007 also included more specific questions about this training experience. Our analysis of the results indicates that:

1. Many employees attend training to develop highly and moderately trainable competencies.
2. Supervisors and other sources of environmental support for training seem to encourage development of moderately trainable competencies, for which employees seek to improve their skills.
3. Attendance at training for less trainable competencies is sometimes imposed as a requirement.

4. Attendance at training for some competencies that are actually less trainable is seen as enjoyable, is recommended by other employees, and is seen as likely to improve job performance unless workplace barriers prevent such improvement.

The last two factors may encourage employees to attend training that is not likely to improve the competencies it targets.

We also examined the competencies that Federal employees believe are most important to be successful in their type of job from the perspective of whether they are highly, moderately, or less trainable. The MPS 2007 included a set of questions addressing the skill or ability most critical for each survey participant's current job. Our analysis of the survey results indicates that:

1. The full range of highly trainable, moderately trainable, and less trainable competencies is seen as important in the Federal workforce.
2. Federal employee beliefs about the relative trainability of competencies are not completely accurate, which can result in inefficiencies in hiring and training decisions.

Recommendations

This study yielded four recommendations for *supervisors* of Federal employees:

1. *Supervisors* should increase the frequency and quality of career development planning. This can be expected to increase the quality and positive impact of training by ensuring that trainability considerations inform training decisions.
2. *Supervisors* should include in their review of employee training requests the trainability of the target competency and how prepared the employee is to benefit from the training. The supervisor should talk to the employee about these issues.
3. *Supervisors* should conduct training needs assessments of their employees and consider how trainable identified needs are when developing training plans.
4. *Supervisors* conducting needs analyses should not rely solely on identification of gaps between current and optimal employee ability levels. They should consider the likelihood that any particular deficiency can be improved by training before adopting training as the solution.

The study makes five recommendations for decision makers in *Federal agencies*:

1. *Agencies* should track and periodically examine reasons for repeated attempts by Federal employees to learn the same training content.
2. *Agencies* should encourage use of pre-training preparedness testing, meaningful training prerequisite requirements, and realistic previews of what training covers.

These tools will make it easier for employees and their supervisors to determine whether training is likely to be successful.

3. **Agencies** should use assessments of training and experience sparingly for selection and promotion decisions. Resumes and job applications will often contain lists of classes taken that may not have produced any competency development. Hiring officials should be especially wary of training experiences that targeted less trainable competencies.
4. **Agencies** should focus selection for hiring and promotion on competencies critical to job performance that are less responsive to training as a first priority and important moderately trainable critical competencies as a second priority. If the selection process will not be overburdened by additional testing, agencies may include assessments for critical competencies that are highly trainable as a third priority. This strategy appropriately focuses on acquiring abilities through selection that may not be easily developed through training on the job.
5. **Agencies** should reconsider sending groups of employees from a work unit or larger organizational unit to the same training. Such training for less or moderately trainable competencies may not match the needs, talents, or preparedness of some employees and may not be a good use of agency resources.

Finally, we include a recommendation for the ***Office of Personnel Management***:

OPM should consider developing an online Employee Development Guide. OPM has helped agency personnel make better decisions about assessment tools by providing the online Assessment Decision Guide.² This guide distills information about the relative strengths of employee selection tools into practical guidance that agencies can use to improve assessment in their hiring processes. OPM can build on this success by creating a similar online Employee Development Guide that educates agency personnel about competency trainability, use of prerequisite requirements and pretesting to establish employee readiness to learn, effective instructional design, and other information that will help employees and their supervisors make good training decisions.

² Available on the Web at <http://apps.opm.gov/ADT/content.aspx>.



CHAPTER 1 – BACKGROUND

The Merit Systems Protection Board (MSPB) is an independent, bipartisan guardian of the merit systems under which Federal employees work. Merit-based civil service rules are essential to ensure that Federal civil servants are well qualified to perform their jobs and are able to serve the public free from management abuse and partisan political pressure.

The MSPB has four statutory functions. First, it provides for independent adjudication of appeals of personnel actions for more than 2 million Federal employees. Second, it ensures agency and appellant compliance with its decisions. Its third function is to review rules and regulations issued by the U.S. Office of Personnel Management (OPM) to ensure they are congruent with merit principles. The fourth function of the MSPB is to conduct studies of Federal merit systems and related issues. These functions work together to help ensure that employees are managed effectively in accordance with the Merit System Principles and free from Prohibited Personnel Practices. This research was conducted as part of the MSPB's responsibility to study the Federal workforce.

Some abilities needed for Federal jobs may be inherently more difficult to learn than others. This variation in difficulty is often referred to as the relative “trainability” of a given ability. The purpose of this report is to contrast employee perceptions of the trainability of job-relevant abilities with research findings about the actual trainability of these abilities.

Our goal is to help agencies use training resources to more effectively enhance individual and organizational performance by highlighting competencies for which training may be more or less effective than other organizational improvement strategies. These findings can increase the efficient and effective management of the workforce by reducing the number of futile and repeated trainings and by encouraging employees to pursue training in areas they might not have believed would be effective. These findings can also increase the effectiveness of employee selection by encouraging agencies to target critical competencies that are less responsive to training, ensuring that persons with those competencies are hired into the workforce. Finally, these findings can educate agencies, supervisors, and employees about effective training strategies and perhaps reduce the perceived unfairness sometimes associated with training issues.

Why Study Training?

The MSPB is interested in the training of Federal employees for several reasons that link directly to its mission to promote Merit System Principles and to reduce the incidence of Prohibited Personnel Practices.

Improve performance. One merit principle requires that “Employees should be provided effective education and training in cases in which such education and training

would result in better organizational and individual performance.”³ The condition included in this Merit Principle recognizes that not all possible training leads to positive results. To be effective we need to understand the conditions under which training is either likely or unlikely to result in performance improvement and use this understanding to inform decisions about when to train and when to pursue other strategies—including hiring people who have the needed skills or reassigning work to current employees who already possess them.

Training may not lead to increased individual or organizational performance under a number of identified conditions, including when the training is not job-related; when the resources needed for training exceed the expected benefits of training; when the targeted skills are already possessed by others in the workforce who are available to do the work; when the available training is poorly designed, poorly matched to the audience, or otherwise flawed; or when there is insufficient opportunity to practice learned skills in the workplace.⁴ Training may also fail to improve performance because the targeted abilities are relatively stable personal characteristics that are not responsive to training. This report focuses on the last issue—which abilities are most and least responsive to training. Guidance in this area can help agencies focus training resources on training that addresses improvable skills and abilities, thereby increasing the value obtained from the limited resources available to train employees.

Efficient and effective. A second Merit Principle informs us that “the Federal work force should be used efficiently and effectively.”⁵ “Effectively” in a training context means that one must try to make training produce the intended results—not only enabling learners to master specific training objectives, but ensuring that such learning ultimately contributes to the agency’s mission. Consequently, the most commonly used frameworks for evaluating training separate outcomes into trainee reactions, trainee mastery of content, transfer of mastery to performance on the job, and positive impact on the organization’s mission.⁶ These frameworks recognize that a number of factors external to training—such as employee motivation, adequate preparation, and barriers to performance on the job—also play a role.

This report’s focus is on the mastery of training content to the extent that it is affected by the ability of trainees to learn the skills they need. Failure to master the content in training will result in failure in all subsequent links in the training-to-mission outcome chain. Yet the possibility that an attempt may be made to train some skills that are relatively unresponsive to training receives little attention compared with other barriers to learning. Employees and those who make decisions about their training may assume that

³ Title 5 United States Code §2301(b)(7). The merit principles referenced in this report can be accessed on the Web at www.opm.gov/OVRSIGHT/mspidx.htm.

⁴ See, for example, Robert F. Mager and Peter Pipe, *Analyzing Performance Problems, 3rd Edition*, Center for Effective Performance, May 1997; and Ruth Clark, *Building Expertise: Cognitive Methods for Training and Performance Improvement*, International Society for Performance Improvement, 2003.

⁵ Title 5 United States Code §2301(b)(5).

⁶ Donald L. Kirkpatrick and James D. Kirkpatrick, *Evaluating Training Programs: The Four Levels, 3rd Edition*, Berrett-Koehler Publishers, January 2006.

everything is equally trainable merely because instructional materials exist that cover—everything. Trainers, particularly those with a financial stake in producing and delivering training, may not be motivated to look too closely at this issue. In addition, out of a sense of equity and fair play, managers may be reluctant to consider that some employees are better prepared than others to benefit from training.

Part of what “efficiently” means in the context of training is that the degree to which trainees attempt to relearn a skill should be minimized. Ideally, they should “get it” in one training experience. Many of the same influencing factors are at work here, such as employee motivation and the quality of training delivery. Among those considered should be how trainable the ability is—to what degree one can reasonably expect training to improve this general type of ability. Efforts should be made to avoid inefficiency that results from allowing—or requiring—employees to continually attempt to learn things that may be relatively unlearnable. Conversely, one should also avoid lost opportunities that occur when employees do not pursue training in an area they incorrectly believe is not trainable. A clearer understanding of the relative trainability of different skills will increase our ability to manage employee development more efficiently and effectively.

Select by ability. A third Merit Principle requires that employees be selected on the basis of relative ability.⁷ The clearest implication of this Merit Principle for Federal employees—and to applicants for Federal employment—is that those selected for employment have the highest scores on valid measures of job-relevant abilities. Less visible, but no less important, is the issue of selecting which job-relevant abilities to measure. For practical reasons, such as applicants’ willingness to sit through a large number of tests,⁸ only a few abilities are typically measured as part of any one hiring decision.

One consideration in prioritizing potential hiring tests is which job-related abilities can be readily developed through training. For those responsive to training, an agency can provide such training for newly hired employees. Less trainable job-critical abilities should be assessed as part of the hiring process. The effectiveness of the hiring process and the performance of the organization are both improved when it is known which competencies are harder to train and the focus is on hiring applicants who already possess them, rather than on easily trainable competencies that can be learned on the job.

Fairly and equitably. A fourth Merit Principle is well-known and well-represented in studies undertaken by the MSPB. Federal Merit System Principles require agencies

⁷ Title 5 United States Code §2301(b)(1) states, “Recruitment should be from qualified individuals from appropriate sources in an endeavor to achieve a work force from all segments of society, and selection and advancement should be determined solely on the basis of relative ability, knowledge and skills, after fair and open competition which assures that all receive equal opportunity.”

⁸ In this context, the term “test” refers generally to any employment selection procedure—not just to paper-and-pencil tests. Structured interviews, assessment center exercises, simulations, reference checks, and other scored procedures can all take their toll on the resilience of even the best qualified applicant.

to manage Federal employees fairly and equitably.⁹ The MSPB has a long history of studying this issue. A series of “fair and equitable treatment” and “glass ceiling” studies have been conducted to investigate fairness toward members of various demographic categories.¹⁰ Two decades of Merit Principles Surveys also address fairness in access to resources, including employee development, of which training is one type.

The MSPB’s research suggests that Federal employees are generally satisfied with the training and career opportunities they receive, with some perception of unfairness. This perception of unfairness may or may not be due to something “wrong” in how training is provided. Whatever the root cause, the perception is evidence of a mismatch between what employees expect and what they receive. Numerous factors affect perceptions of fairness, most noticeably the lack of funding for as much job-relevant training as employees—and their supervisors—believe they need. One potential but largely unexplored factor is employee expectation of training on a skill or competency that may not be seen as trainable by the supervisor or agency. If the supervisor’s perception is accurate, resources are being saved by this decision. If not, there may be some other valid reason the employee is denied access to this training. In either case, the employee in such a situation may perceive unfairness in being denied access to training.

More widespread information about which competencies are more trainable and which are less trainable can reduce employee perceptions that denial of some training is due to unfairness. Employees who are better informed about the realities of what training can and cannot do will better understand their supervisors’ and agencies’ decisions about access to training.

Strategic Perspective

In this report, and in most other MSPB research, we present a strategic, Governmentwide perspective on training and development through which trends and issues that apply broadly across Federal agencies and their employees are identified. The MSPB’s perspective is *not* a substitute for either job analysis or training needs analysis conducted at the agency, work team, or individual employee level. These more detailed and context-sensitive analyses are necessary as a basis for effective organizational and career planning. The MSPB hopes to help agencies improve their own data gathering by highlighting issues that may affect it.

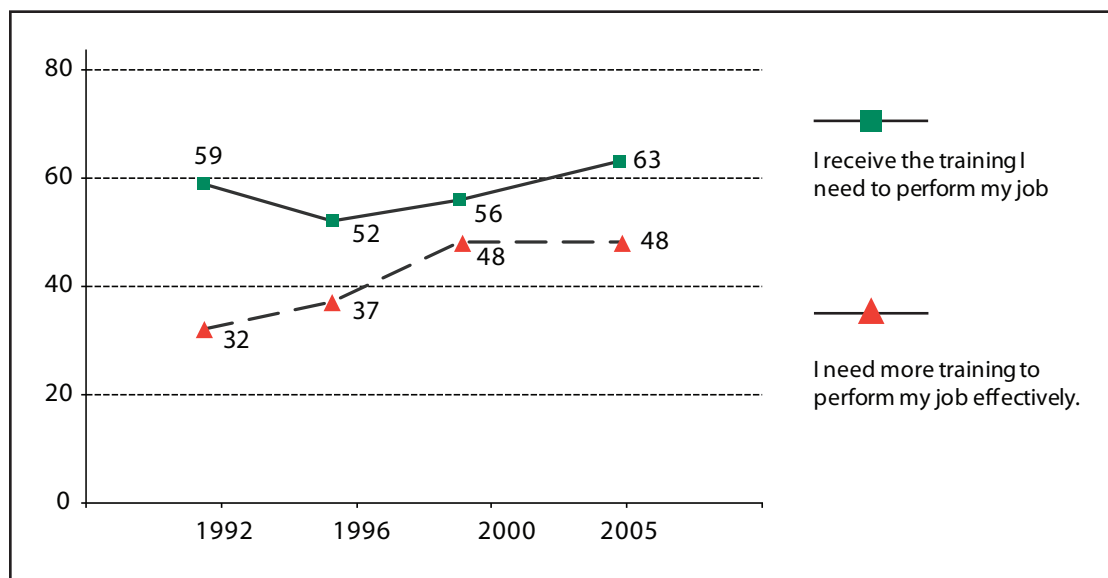
The MSPB’s previous research reflects this broad perspective. Figure 1 summarizes training needs research conducted across several past administrations of Merit Principles

⁹ Title 5 United States Code §2301(b)(2) states, “All employees and applicants for employment should receive fair and equitable treatment in all aspects of personnel management without regard to political affiliation, race, color, religion, national origin, sex, marital status, age, or handicapping condition, and with proper regard for their privacy and constitutional rights.”

¹⁰ See U.S. Merit Systems Protection Board, *A Question of Equity: Women and the Glass Ceiling in the Federal Government*, October 1992; *Fair and Equitable Treatment: A Progress Report on Minority Employment in the Federal Government*, August 1996; *Achieving a Representative Federal Workforce: Addressing the Barriers to Hispanic Participation*, September 1997; and *Fair and Equitable Treatment: Progress Made and Challenges Remaining*, December 2009.

Surveys. These two questions track Federal employee perceptions of the adequacy of the training they receive to perform their basic job functions (“I receive the training I need to perform my job.”) and the training they receive that helps them achieve a superior level of performance (“I need more training to perform my job effectively.”). These results, as well as the percentage (52 percent) of employees in the 2007 Merit Principles Survey who report overall satisfaction with training for their current job, show that, although attitudes toward training appear to be improving, some concerns remain. Such general questions also allow us to assess the perceived importance of training relative to other employee needs, such as resources to do their jobs, rewards and recognition, and adequate supervision. Using such data, we have in the past investigated the importance of training to employees without regard for the *content* of the training or the particular knowledge, skills, and abilities it is intended to develop.

Figure 1. Percentage of Merit Principles Survey Participants Agreeing With Two Statements About Their Training Needs in 1992, 1996, 2000 and 2005 ¹¹



A previous MSPB report examined the training needs of Federal employees across a number of functional training categories.¹² The purpose of that research was not to replace organizational or individual needs analysis but to examine the role and impact of human resources professionals on training within Federal agencies. This earlier report identified several issues with training of the Federal workforce that remain problematic, including the infrequency of training needs analysis, inadequacy of training funds, and poor decision making about what training employees should receive. The current report addresses one aspect of the decision to send employees to training: Whether the

¹¹ The data that forms the basis for this table were collected through Merit Principles Surveys conducted in 1992, 1996, 2000 and 2005. This training trend is reported and discussed in U.S. Merit Systems Protection Board, *Accomplishing Our Mission: Results of the Merit Principles Survey 2005*, Washington, D.C., February 2007.

¹² U.S. Merit Systems Protection Board, *Leadership for Change: Human Resource Development in the Federal Government*, Washington, D.C., July 1995.

employee is likely to improve the targeted ability as a result of training. If agencies can identify and avoid training which is unlikely to succeed, agency resources can be focused on training with higher chances of success. The scarce Federal training dollar will be more wisely spent.

To achieve this goal, we will examine the content of training Federal employees believe they need and the content of the training they are receiving. Because of the great variety of knowledge, skills, and abilities needed by Federal employees doing different work—and the even greater variety of specific training courses available to address these needs—our approach will necessarily be a summary one. We will address training needs organized into categories of similar training content. These categories are designed to capture the relative trainability of different types of content.

We will maintain a strategic focus in our examination of training needs and instances. Attending to our past research, which indicates some dissatisfaction with training, we explore whether some of this dissatisfaction may be related to the type and relative trainability of knowledge, skills, and abilities that Federal employees attend training to develop. We seek Governmentwide patterns that may help agencies and individuals make informed decisions about training as they conduct organizational and individual training needs analyses.

Overview of Study Methodology

For this study, the MSPB used two primary methods to examine training needs and training experiences of Federal employees. The first was a literature review of competency models and of research related to the trainability of various types of knowledge, skills, and abilities. The second was survey research centering on three open-ended questions placed on two Governmentwide surveys.

Literature review. The literature review covered published competency models for public and private sector jobs and the professional literature that describes and critiques competency modeling and job analysis. We also reviewed professional literature on the several taxonomies used to classify training content, how competencies are identified and competency models are developed, what research has identified as basic human abilities, and the relative extent to which these abilities are acquired through training and other formal learning experiences.

Merit Principles Surveys. The MSPB conducts a periodic Governmentwide Merit Principles Survey (MPS) of Federal employees. Data for this study was collected during the past two administrations of the MPS. The Merit Principles Survey 2005 was administered during the summer and early fall of 2005 and was completed by 36,926 participants.¹³ The Merit Principles Survey 2007 was administered in the fall of 2007 and completed by 41,577 participants.¹⁴

¹³ U.S. Merit Systems Protection Board, *Accomplishing Our Mission: Results of the Merit Principles Survey 2005*, Washington, DC, February 2007.

¹⁴ U.S. Merit Systems Protection Board, *Managing for Employee Engagement: Communication, Connection and Courage*, Washington, D.C., July 2009.

Questions in the two surveys asked Federal employees about their training needs, training experiences, and the knowledge, skills, and abilities needed to perform their jobs. Their responses are analyzed and reported in the pages that follow.

Organization of This Report

In the chapters that follow, we discuss the competencies Federal employees report that they need and which of these are most responsive to training.

- Chapter 2 reviews the development of competencies to describe important job-related abilities and the distinction between trainable competencies and stable personal characteristics. We develop a framework for classifying competencies as highly trainable, moderately trainable, and less trainable.
- Chapter 3, uses the framework to examine employee assertions about the competencies they believe they most need to develop and discuss how to set employee expectations appropriately with regard to competency trainability.
- Chapter 4 examines the most recent instance of job-related training that employees received, what competencies it targeted, and how differences in trainability of this competency relate to the training experience.
- Chapter 5 examines the competencies Federal employees say are most important to succeeding at their type of job, independent of their own training needs.
- Chapter 6 presents conclusions and recommendations for improving decisions about training.
- The appendix describes the methods used in this study, including a review of relevant competency models, a review of literature on learning, and two Governmentwide surveys of Federal employees.



CHAPTER 2 – COMPETENCIES AND TRAINABILITY

In this chapter, we use the results of our literature review to develop a framework of more trainable and less trainable competencies. This framework is used to classify answers to survey questions about Federal employees' training needs, the training they have received, and the abilities they need to do their jobs.

A Common Language

Trainers and instructional designers are challenged by a certain kind of language problem—there are many ways to talk about what employees need to learn to do their jobs. Each of these different languages has limitations.

One way employees talk about what they need to learn and do on their jobs is by referring to the training classes they have taken. However, training class names may not fully or accurately describe their content. Even when they do, it can be difficult to recognize when two differently-named classes cover the same content. Instructional designers, on the other hand, typically describe training content by using lists of formally structured training objectives that specify what is learned in each instance. The standardized format of these objectives makes comparison of different training classes more feasible.¹⁵ Because training objectives are written to describe learning processes, they usually do not address how the content of training relates to the learner's job.

Another way Federal employees and their supervisors describe training is in terms of the job tasks that need to be performed competently. Well-developed methods exist for analyzing these tasks and for developing job descriptions based on them.¹⁶ But long lists of tasks are unwieldy as job descriptions, and they often bear no obvious relation to the abilities needed to perform them and no indication of their relative importance to job performance.¹⁷

Recognizing the limitations of these various ways of talking about learning, a group of psychologists suggested competency modeling as a more useful way to identify the abilities needed for superior job performance. Originating with motivation psychologist David McClelland and developed as a work practice by Lyle Spencer and Richard

¹⁵ L. Anderson and D. Krathwohl *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York, NY: Longman.

¹⁶ Erich P. Prien, Leonard D. Goodstein, Jeanette Goodstein and Louis G. Gamble *A Practical Guide to Job Analysis*, John Wiley, San Francisco, 2009.

¹⁷ U.S. Merit Systems Protection Board, *Help Wanted: A Review of Federal Vacancy Announcements*, Washington, DC, April 2003.

Boyatzis,¹⁸ this approach has achieved wide acceptance and great influence over the way jobs are described, and its validity has been demonstrated.¹⁹ It is the basis of much of the job analysis work done by the U.S. Office of Personnel Management for Federal agencies and work done by the agencies themselves.

Competencies have three defining characteristics. First, they are not related just to a job but to superior performance on that job. In the initial stage of competency modeling, experienced employees provide “critical incidents” (CIs)—descriptions of job performance they have seen that is either outstandingly good or disastrously poor. CIs describe the setting of the performance, what the employee did or did not do, and the outcome. Unlike exhaustive lists of job tasks, competencies are based on job performance that makes a difference—for better or worse.

Second, competencies are closely related to general human abilities. There is a long history of research on such abilities, beginning in the 1930s²⁰ and continuing to the present.²¹ The research examines human performance on many basic tasks and identifies a small set of abilities that explain performance on a larger set of similar tasks. A mathematical ability, for example, might explain why people who are good at statistics are also good at using spreadsheets and calculating investment risk. This research has produced agreement among researchers about general human abilities that underlie more specific abilities.

In competency modeling, psychologists who are familiar with these findings match each CI to the underlying abilities needed to perform in it. Competency models contain a manageably small set of competencies because the process is doubly constrained—by the small number of general abilities and by further restriction of these abilities to those needed to excel on the job.

Finally, competency models do not consist only of relatively short lists of job-related abilities. These abilities are prioritized by the number and importance of the job tasks that each competency enables an employee to perform. This prioritization can be used for a number of practical human resource purposes, including deciding which competencies to assess for hiring or promotion and which to target for training.

¹⁸ D. C. McClelland, “Testing for competence rather than for intelligence,” *American Psychologist*, 28 (1973), 1-14; L. M. Spencer and S. M. Spencer, *Competence at Work*, Wiley, New York, 1993. Richard E. Boyatzis, *The Competent Manager: A Model for Effective Performance*, Wiley: San Francisco, 1982.

¹⁹ J. S. Shippmann, R. A. Ash, M. Battista, L. Carr, L. D. Eyde, B. Hesketh, J. Kehoe, K. Pearlman, and J. I. Sanchez, “The practice of competency modeling,” *Personnel Psychology*, 53 (2000), 703-740.

²⁰ L. L. Thurstone, *Primary Mental Abilities*, University of Chicago Press, Chicago, 1938.

²¹ Frank L. Schmidt and John Hunter, “General mental ability in the world of work: Occupational attainment and job performance,” *Journal of Personality and Social Psychology*, 86(1) (2004), 162-173. See also Jesus L. Salgado, Neil Anderson, Silvia Moscoso, Christina Bertus, Philip del Fruyt, and Jean Pierre Rolland, “A meta-analytic study of general mental ability validity for different occupations in the European community,” *Journal of Applied Psychology*, 88(6) (2003), 1068-1081.

The relationship between competencies and general human abilities makes competencies a particularly useful language for examining the job-related abilities that employees may or may not develop through training.

Reemphasizing Trainability

Research on competencies and the mental abilities to which they are related makes distinctions among competencies that can be developed through training, those that are unresponsive to training, and those that are moderately responsive. We will refer to this dimension as competency “trainability.”

Highly trainable. Early work on competencies made a distinction between knowledge and the human abilities needed to use that knowledge on the job. Knowledge consists of facts, procedures and other general information that can be learned by almost anyone. Because competencies are based on general abilities, they also have a performance component. This component will vary among persons who have different levels of natural ability. It has become common to use competencies as a more general term to mean any information needed for the job. In a sense, the distinction between competencies as abilities and competencies as knowledge has been lost.

Competencies that consist primarily of knowledge can be improved readily through training and are appropriate training choices for all employees who need them on the job.²²

Less trainable. The initial formulation of competencies and competency modeling also identified “trait” competencies—personal characteristics that resist change. Boyatzis and his colleagues have continued to emphasize this distinction.²³ Some current practitioners have been clearly influenced by their work and focus on the degree to which various competencies respond to training.²⁴ Others make the distinction by separating competencies, which are assumed to be learnable, from attributes, which are relatively unchanging aspects of learners.²⁵

²² Robert M. Gagne, Walter W. Wager, Katharine Golas and John M. Keller, *Principles of Instructional Design*, Wadsworth Publishing, New York, 2004.

²³ Richard Boyatzis, David Leonard, Kenneth Rhee and Janet Wheeler, “Competencies can be developed, but not in the way we thought,” *Capability*, 2(2) (1996), 25-41.

²⁴ See Marcel van der Klink, Kathleen Schlusmans and Jo Boon, “Designing and implementing views on competencies” (pp. 221-233) in Miguel-Angel Sicilia, *Competencies in Organizational E-learning*, Information Science Publishing, Hershey, PA, 2007. Also, James S. Bowman, *Professional Edge: Competencies in Public Service*, M. E. Sharpe, Armonk, NY, 2004.

²⁵ K. Moloney, “Why competencies may not be enough,” *Competency* 5(1) (1997), 33-37; L. C. Woollacott, “Taxonomies of engineering competencies and quality assurance in engineering education” (pp. 257-295), in Arun Patil and Peter Gray, *Engineering Education Quality Assurance: A Global Perspective*, Springer, New York, 2009. J. Trusty and D. Brown, “Advocacy competencies for professional school counselors,” *Professional School Counseling* 8(3) (2005), 259-265.

Competencies that are really traits or personal attributes may make a difference on the job, but they are frequently not responsive to improvement through training. When such competencies are important, measurement professionals advise using carefully-designed assessments to hire applicants who already possess them.²⁶

Moderately trainable. The mental abilities research is also useful for classifying competencies as more trainable or less trainable. Studies in this area are conducted by measuring a number of different abilities and using the statistical procedure of factor analysis to determine which abilities are similar.²⁷ Popular awareness of this research has been increased by Howard Gardner's work with multiple intelligences in education settings. The concept is the same—distinct sets of abilities that cluster together—and some people have to a greater degree than others.²⁸ Some types of competencies have both a skills component and an ability component. The former component can be improved through training; the latter is limited by the degree of natural talent the person brings to the job. Such competencies are only partially responsive to training.

Training of such competencies is most effective when training prerequisites and pretesting ensures that trainees have the abilities needed to succeed. Prerequisites are clear statements of prior learning and capabilities that a person must possess before learning information or skills that build on them. Such “enablers” are used in training design to determine the order in which topics, units, and even courses should be sequenced to achieve efficient learning.²⁹ At a minimum, prerequisites should be clearly communicated to potential trainees, allowing them—and their supervisors—to assess their readiness for training.

Pretesting is a more intensive approach to determining readiness for training. It requires that potential trainees demonstrate mastery of prerequisites by passing an assessment designed to measure their abilities. Boyatzis recommends that training for moderately trainable competencies should include “...individualized assessment... [and]...diagnosis of their current competency and knowledge strengths and needs.”³⁰ Pretesting can also be used to identify persons who have already mastered the training content, allowing them to test out and skip unnecessary training. Whether used as a screening tool or to allow skipping, pretesting saves resources by reducing the number of people who attend training from which they are not likely to benefit.

Focus on trainability. Some practitioners distinguish between more trainable and less trainable competencies when building competency models.³¹ For example, one

²⁶ Robert M. Guion, *Assessment, Measurement, and Prediction for Personnel Decisions*, Psychology Press, Philadelphia, 1997.

²⁷ See, for example, Robert J. Sternberg and Elena L. Grigorenko, *The Psychology of Abilities, Competencies and Expertise*, Cambridge University Press, Cambridge, UK, 2003; John B. Carroll, “*Human Cognitive Abilities: A Survey of Factor-analytic Studies*,” Cambridge University Press, Cambridge, UK, 1993.

²⁸ Howard Gardner, *Multiple Intelligences*, Basic Books, New York, 2008.

²⁹ Roger Buckley and Jim Caple, *The Theory and Practice of Training*, Kogan Page, London, UK, 2007.

³⁰ Boyatzis et al., 1996, p. 35.

³¹ Van der Klink et al., 2007.

leadership competency model divides competencies into three types: (1) “know” (knowledge) competencies are learned knowledge and skills; (2) “be” (dispositional) competencies are personal attributes; and (3) “do” (action) competencies are learned behaviors that draw on both.³² These categories correspond very closely to our distinction among highly trainable, less trainable, and moderately trainable competencies.

Many practitioners, however, do not recognize these trainability distinctions. Competency modeling reports often do not directly address the issue of competency trainability. Some explicitly state that all competencies are equally trainable.³³ This lack of emphasis on trainability corresponds to a departure from the defining methods of competency modeling, resulting in longer lists of competencies that have the form of job tasks or educational objectives. It can also result in efforts to attempt to improve traits through training. This imprecision has caused one competency modeler to lament that “...many organizations do not yet fully examine the significance, or exploit the value, of competency models. In fact the ‘competencies’ that many organizations are using are not competencies, i.e., defined in precise behavioral terms, at all.”³⁴

We believe it is important to consider competency trainability when making training decisions. In the next section we draw from research on competencies and mental abilities to identify the types of competencies that are highly trainable, moderately trainable, and less trainable.

A Framework of Competency Types

The six types of competencies presented in this section were created using two sources. The first source is the responses to our three MPS open-ended questions about training needs, training classes, and important abilities on the job. Each response could be classified into one of these categories.³⁵ The second source is the literature review on competencies and general abilities, which allows us to determine the general trainability of each type of competency.

Knowledge. For our purpose, knowledge competencies include job knowledge, academic subjects, and knowledge of laws, policies, and regulations.

³² William E. Coburn, *The Reagan Way: Using Leadership Skills for Strategic Success*, U.S. Army War College, Carlisle Barracks, PA, 2000. See also Leonard Wong, Stephen Gerras, William Kidd, Robert Pricone, and Richard Swengros, *Strategic Leadership Competencies*, Strategic Studies Institute, U.S. Army War College, Carlisle Barracks, PA, 2003.

³³ For example, Donald Shandler, *Competency and the Learning Organization*, Crisp Publications, Menlo Park, CA, 2000.

³⁴ Mike Young and Victor Dulewicz, *A Model of Command, Leadership and Management Competency in the British Royal Navy*, 2005, p. 231.

³⁵ Federal employees do not typically use the word “competencies” when describing training, training needs, or job requirements. MSPB survey question field tests about “competencies” produced nearly universal confusion. Despite much discussion of competencies in human resource circles, it is a specialized and unfamiliar concept to most Federal employees. This is why the open-ended questions were phrased in terms of knowledge, skills, and abilities.

Research indicates that this type of material is learnable by most people when it is presented in a well-designed way,³⁶ learners have mastered any needed prerequisite information,³⁷ and learners can use new knowledge and practice new skills while receiving corrective feedback.³⁸ It is a type of competency for which “... [e]xpert performance can be acquired by anyone through focused effort and hard work.”³⁹

Knowledge competencies are **highly trainable**—they can be readily learned in training classes by almost all learners.

Language. Language competencies include reading, writing, learning other languages, editing, preparing lengthy documents, and preparing and giving speeches to large audiences.

Language competencies have a personal characteristic component. Linguistic abilities often emerge as a separate type of ability or “intelligence” in factor analytic studies of human abilities. A great deal of evidence suggests that language abilities have specialized processing centers in the brain and that genetic factors have a great influence on one’s ability to use language.⁴⁰ There is also evidence for instructional effectiveness of language training. Educational and training effectiveness research demonstrates the effectiveness of well-designed instruction to improve writing skills, speaking ability, and learning of foreign languages. Practitioners recognize the effect of natural ability and the importance of pretesting for language-related classes.⁴¹

Language competencies are classified as **moderately trainable**—they can be learned, but how well they are learned is constrained by a person’s natural talent for language.

Social. Social competencies help us get along with other people. They range from basic interpersonal skills and teamwork to more specialized abilities to negotiate, manage conflict, and foster diversity. They include the ability to work well with customers, those in authority, and “difficult people.” The importance of social competencies—specifically,

³⁶ Gagne et al., 2004.

³⁷ Sharan B. Merriam, Rosemary S. Caffarella, and Lisa M. Baumgartner, *Learning in Adulthood: A Comprehensive Guide*, Jossey-Bass, San Francisco, 2006.

³⁸ Manuel London, *Job Feedback: Giving, Seeking, and Using Feedback for Performance Improvement*, Psychology Press, Philadelphia, 2003.

³⁹ K. Anders Ericsson, “The search for general abilities and basic capacities” (pp. 93–125), in Robert J. Sternberg and Elena L. Grigorenko, *The Psychology of Abilities, Competencies and Expertise*, Cambridge University Press, Cambridge, UK, 2003.

⁴⁰ D.V.M. Bishop, “The roles of genes in the etiology of specific language impairment,” *Journal of Communication Disorders* 35 (2001), 311–328; Noam Chomsky, *Language and Mind*, Cambridge University Press, New York, 2006; Matthew Traxler and Morton Ann Gernsbacher, *Handbook of Psycholinguistics*, Elsevier, Amsterdam, 2006; K. Stromswold, “The heritability of language: A review and meta-analysis of twin, adoption, and linkage studies,” *Language* 77 (2001), 647–723.

⁴¹ Edward M. White (1994). *Teaching and Assessing Writing*. Calendar Islands Publisher: Portland, Maine. Ronald Thomas Kellog (1999). *The Psychology of Writing*. Oxford University Press: Oxford, UK. Glen Fulther and Fred Davidson (2007). *Language Testing and Assessment*. Routlage: New York, NY.

the ability to correctly interpret emotions expressed by others—has been emphasized as part of the “emotional intelligence” needed to succeed in school, work, and the community.⁴² Social competencies make a contribution to success on the job separate from the contribution made by cognitive abilities.⁴³

Evidence exists for a personal characteristic component in social competencies. The five-factor (or “Big Five”) model of personality, considered the most valid approach by personality researchers, contains two social competency components—extroversion and agreeableness. These components are stable across adult life and present across cultures, and they have a genetic component.⁴⁴ Different people possess different degrees of these innate factors. Research also identifies a genetic influence on humans’ basic ability to “read” other people and respond to their emotional cues.⁴⁵ Boyatzis and his colleagues have examined the trainability of social competencies and found a split pattern depending on the specific competency. Training improved networking, negotiating and teamwork, but no improvement was seen in empathy and the ability to develop others.⁴⁶ Some social competencies can be improved through training if the appropriate methods are used.⁴⁷

Social competencies are considered *moderately trainable*—improving them through training is constrained by each learner’s individual level of talent.

Reasoning. Reasoning competencies are based on logic and mathematics, and include such practical competencies as analysis, troubleshooting, and computer programming.

A great deal of evidence exists for a personal characteristic component of these competencies. This group is repeatedly identified as a factor in the mental ability studies mentioned earlier in this chapter. They are closely identified with the type of general intelligence measured by traditional intelligence tests.⁴⁸ Research has identified a personal ability component as a significant determiner of performance in mathematics and applied reasoning competencies.⁴⁹

⁴² John D. Mayer, Peter Salovey, and David R. Caruso, “Emotional intelligence as zeitgeist, as personality, and as a mental ability,” in R. Baro-On and J. D. A. Parker (Eds.), *The Handbook of Emotional Intelligence, Theory, Development, Assessment, and Application at Home, School, and in the Workplace*, San Francisco, CA, Jossey-Bass, 2000.

⁴³ Gerald L. Ferris, L. A. Witt, and Wayne A. Hochwarter, “Interaction of social skill and general mental ability on job performance and salary,” *Journal of Applied Psychology* 86(6) (2001), 1075–1082.

⁴⁴ Timothy A. Judge, Chad A. Higgins, Carl J. Thoresen, and Murray R. Barrick, “The Big Five personality traits, general mental ability, and career success across the lifespan,” *Personnel Psychology* 52(3) (1999), 621–652.

⁴⁵ Michael Rutter, *Genes and Behavior: Nature—Nurture Interplay Explained*, Blackwell Publishing, Oxford, UK, 2007; Giacomo Rizzolatti and Laila Craighero, “The mirror neuron system,” *Annual Review of Neuroscience*, 27 (2004), 169–192.

⁴⁶ Boyatzis et al., 1996.

⁴⁷ Richard Boyatzis, “Competencies in the 21st century,” *Journal of Management Development*, 27(1) (2008), 5–12.

⁴⁸ This point of view is well summarized in Arthur R. Jensen, *The g Factor: The Science of Mental Ability*, Greenwood, Westport, CT, 1998.

⁴⁹ Y. Kovas, S. A. Petrill, and R. Plomin, “The origins of diverse domains of mathematics: Generalist genes but specialist environments,” *Journal of Educational Psychology* 99 (2007), 128–139; M.J.A. Howe, J. W. Davidson, and J. A. Sloboda, “Innate talents: Reality or myth?” *Behavioral and Brain Sciences* 21 (1998), 399–442.

There is evidence for instructional effectiveness for these competencies. Vast curricula exist to build on innate math and reasoning abilities in areas of problem-solving, mathematics, and applied logic. Great attention is paid in mathematics, computer programming, and applied disciplines to pretesting and ensuring that learners have prerequisite ability and learning.

Reasoning competencies are considered *moderately trainable*—reasoning strategies can be taught, but the competencies also have a natural ability component.

Motivation. Motivation competencies capture employee willingness to perform work. They include personal characteristics such as resilience in the face of difficulty, integrity, and public-spiritedness.

Research has shown a relationship between these competencies and personality constructs—characteristics of individuals that do not change much, if at all.⁵⁰ They are highly stable over time through the life of individuals.⁵¹ Research has also found substantial genetic influences on personality dimensions.⁵² Some competency models make similar distinctions between trainable competencies and personality factors such as motives and traits.⁵³

Motivation competencies are *less trainable*.

Mental Style. Mental Style competencies include long-term mental habits such as flexibility, integrity or conscientiousness, creativity, ability to deal with complexity, rapid learning ability, stamina, and decisiveness.⁵⁴

Research has shown that such “patterns of thought” have a genetic influence to a high degree and are highly stable over time.⁵⁵ They are very difficult to train.⁵⁶ One

⁵⁰ V. Dulewicz, “Personal competences, personality and responsibilities of middle-managers,” *Competency Journal*, 1(3) (1994), 20–29.

⁵¹ A Caspi, B. W. Roberts, and R. L. Shiner, “Personality development: Stability and change,” *Annual Review of Psychology* 56 (2005), 17.1–17.32; J. C. Loehlin, R. R. McCrae, P. T. Costa, and O. P. John, “Heritabilities of common and measure-specific components of the Big Five personality factors,” *Journal of Research in Personality* 32 (1998), 431–453.

⁵² T. J. Bouchard, “Genetic influences on human psychological traits: A survey,” *Current Directions in Psychological Science* 13(4) (2005), 148–151.

⁵³ Young and Dulewicz, 2005.

⁵⁴ Coburn, 2000. See also Wong et al., 2003; Gregor Cerinsek and Slavko Dolinsek, “Identifying employees’ innovation competency in organizations,” *International Journal of Innovation and Learning* 6(2) (2009), 164–177.

⁵⁵ Rutter, 2007, p. 74; J. A. Harris, “Measured intelligence, achievement, openness to experience, and creativity,” *Personality and Individual Differences* 36 (2004), 913–929; R. K. Sawyer, *Explaining Creativity: The Science of Human Innovation*, Oxford University Press, New York, 2006.

⁵⁶ Dean Simonton, “Expertise, Competence and Creative Ability” (pp. 213–239), in Robert J. Sternberg and Elena L. Grigorenko, *The Psychology of Abilities, Competencies and Expertise*, Cambridge University Press, Cambridge, UK, 2003.

competency development guide suggests that developing other competencies as workaround substitutes for these competencies is more feasible than attempting to develop them directly.⁵⁷

In our framework, mental style competencies are considered *less trainable*.

These six competency categories are directly related to competency trainability. Training that targets Knowledge competencies is more likely to be successful. On the other hand, it is very difficult to change Motivation and Mental Style competencies through training. Each person brings some level of natural ability to any attempt to improve Language, Social, or Reasoning competencies. Within these limits, training can produce improvement in such moderately trainable competencies.

Federal Employee Beliefs About Trainability

We next turn to how Federal employees, as represented in our Merit Principles Surveys, view competency trainability. In the MPS 2007, we asked participants to tell us the most important skill or ability needed to perform their type of job. The question was posed in a general way to minimize the influence of any training that the employee might personally need. Responses to this question were classified into one of the six competency categories presented in the last section: Knowledge, Language, Social, Reasoning, Motivation or Mental Style. We also asked whether the competency identified “...is more of a personal characteristic or ability that cannot easily be learned.” Figure 2 summarizes, for each of the six competency types, the percentage of employees who believe each is a difficult-to-train personal characteristic.⁵⁸

These data have three implications. First, at a general level, Federal employee beliefs are consistent with the research results. Knowledge competencies are least often seen as difficult to train. Moderately trainable competencies as a group are more often seen as difficult to train. And the two less trainable competencies are also more likely to be seen as personal characteristics and therefore less likely to respond to training. The second implication is that the Reasoning and Mental Style competencies depart from this pattern—they are less likely to be seen as personal characteristics than other competencies in their respective categories. Put another way, they are seen as more responsive to training than the research suggests.

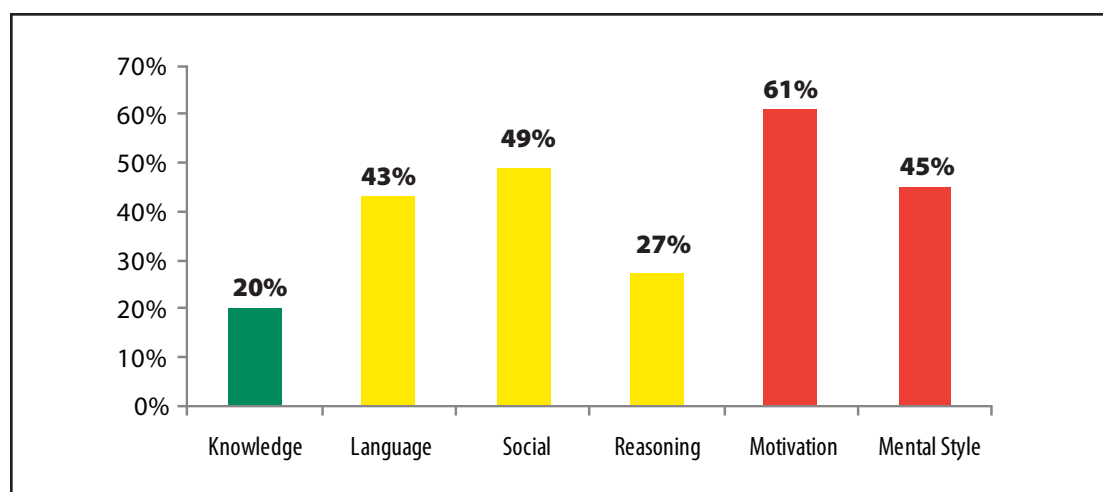
The final implication of the data in Figure 2 is that, even though Federal employee beliefs generally correspond with the research findings on trainability, many do not. Twenty percent of employees regard Knowledge competencies as difficult to train, which may cause them not to seek training that may benefit them because they do not believe it will

⁵⁷ Michael M. Lombardo and Robert W. Eichinger, *For Your Improvement*, Lominger International, London, UK, 2004.

⁵⁸ In figure 2 and in other charts throughout the report, responses that pertain to highly trainable competencies are coded green, moderately trainable competencies are coded yellow, and less trainable competencies are coded red.

be effective. Even if they do attend such training, research indicates that their belief that the training is not likely to help them may become a self-fulfilling prophecy, leading to less learning of a critical job skill.⁵⁹

Figure 2. Percentage of Employees Indicating That Each Type of Competency Is a Less Trainable Personal Characteristic



A converse problem may exist with less trainable competencies, particularly with those in the Mental Style category. Employees who see these competencies as trainable may pursue training in these areas and experience frustration and lack of success. In addition to the personal cost, agency and ultimately taxpayer resources are not used efficiently in this situation.

The rest of this report will examine evidence about the prevalence of this problem in the Federal workforce, the factors that may influence it, and some possible solutions.

Summary

In this chapter, we examined the literature on competencies and mental abilities. We used this information to create a six-category competency framework that distinguishes among highly, moderately, and less trainable competencies. We examined the degree to which Federal employee beliefs about competency trainability correspond to research findings in this area.

In the next chapter, we examine MPS 2005 data about Federal employee training needs, including what types of competencies they say they need—and how trainable they are.

⁵⁹ Dale H. Schunk and Peggy A. Ertmer, “Self-regulation and academic learning: Self-efficacy-enhancing Interventions” (pp. 631–649), in Roy F. Baumeister and Kathleen D. Vohs, *Handbook of Self-Regulation*, Academic Press, San Diego, 2000.



CHAPTER 3 – THE TRAINING EMPLOYEES WANT

To examine Federal employees’ training needs through the lens of which competencies are more trainable or less trainable, we included several questions about participants’ individual training needs on the MPS 2005. This chapter summarizes the responses to those questions.

The MPS 2005 results portray a workforce that is happy with Federal employment in many ways, from the agency missions they are working to accomplish to the way they are treated in the workplace. Participants were confident in their collective abilities, with nearly three-quarters (74 percent) agreeing that “The workforce has the job-relevant skills necessary to accomplish organizational goals.” Over half (61 percent) of the participants reported that they were given a real opportunity to improve their skills in their current organization. A similar percentage (63 percent) agreed that they received the basic training needed to perform their jobs. Nevertheless, about half (48 percent) would like more training to increase their ability to do their job well.⁶⁰

Though Federal employees were generally pleased with the training they received, the results indicated some room for improvement. In the following three sections we examine the trainability of employees’ reported training needs, the expectations employees have about training, and factors in the workplace that may affect what training employees expect to receive.

Training Needs and Trainability

To understand the skills employees wanted to develop—and what training this might cause them to seek—we asked the following open-ended question:

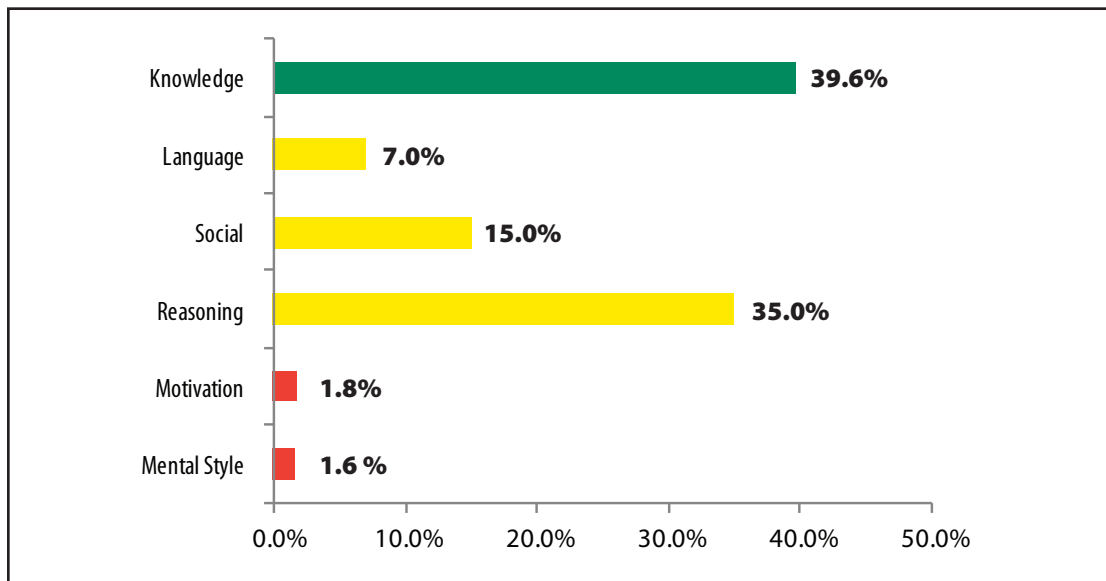
“Briefly describe, in one or two sentences, the most important skill or ability you could learn to improve your performance in your current job.

Please describe this skill or ability well enough that a training specialist who does not know your job could understand what you need to learn.”

This question allowed survey participants to describe their most important training need in their own words. During data analysis, each response was coded into one of the six competency categories described in Chapter 2. A summary of their responses by category is presented in Figure 3. Each of the six competency types has been classified with respect to its relative trainability, according to the research literature.

⁶⁰ For a complete description of the results of this Governmentwide survey, see U.S. Merit Systems Protection Board, *Accomplishing Our Mission: Results of the Merit Principles Survey 2005*, Washington, D.C., February 2007.

Figure 3. Individual Training Desired by Competency Category



The good news for Federal training and development is that nearly four in ten (39.6 percent) of the skills and abilities that employees believe would improve job performance fall into the highly trainable competency category. This means many Federal employees are looking for training to improve abilities that are likely to be improved by that training. But the good news must be qualified by the fact that many of these trainable skills have knowledge and experience prerequisites. The majority of reported training needs (57 percent) fall into the moderately trainable category. They are learnable, but the degree to which they can be learned is constrained, not only by adequate preparation, but by differences in people's natural abilities.

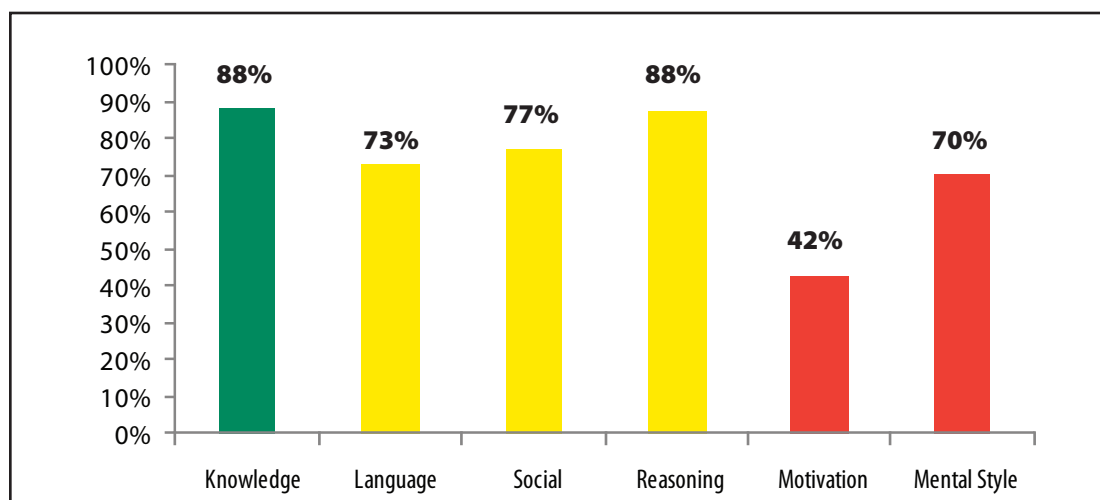
It is also good news that only a very small percentage (3.4 percent) of Federal employees believe that they need training in either of the less trainable competency categories. However, though this finding is positive, the small percentage still represents tens of thousands of Federal employees. We will focus on this group in the following pages to better understand what may lead some employees to seek training in competencies that do not respond well to training.

Employee Beliefs About Training

Employee choices and actions are partially determined by their expectations. Examining how employee expectations about training relate to the type of competency they believe they need to develop can help us understand why they seek certain training. The MPS 2005 asked three questions related to employee beliefs about training.

Funding for training. After indicating which competency they most needed to develop, MPS 2005 participants were asked how their training should be funded. Figure 4 shows the percentage of survey participants who agreed with the statement: "My agency should support this improvement by paying for training or education," separated into competency categories.

**Figure 4. Percentage Agreeing With
“My agency should support this improvement by paying for training or education.”**



Federal employees largely agree that their agency should pay for job-related training, although a minority either place this responsibility elsewhere or perhaps believe their agency has more important priorities than meeting their most critical training need.

Some differences are apparent across competency categories. Motivation and Mental Style competencies—both less trainable—are less likely than the other four types to be seen as worthy of agency funding. But note that the percentage of employees who expect their agency to fund training for a Motivation competency is much lower than for Mental Style competencies. Mental Style competencies are seen as legitimate training topics almost as frequently as Language competencies.

These data are generally consistent with our observation that Federal employees’ views of competency trainability match findings from research. In particular, development of Motivation competencies is less often expected of the agency—perhaps because this investment is less likely to result in improvement in a less trainable competency. The greater expectation of support for training in Mental Style competencies is not consistent with research findings. If employees were aware of the less trainable nature of these competencies, their expectations might change, fewer might believe that their agency should pay for development in these areas.

Employee learning strategy. The MPS 2005 included questions that probed the reasons Federal employees might have for targeting a particular competency as the most important to develop. The first possibility we considered was that a needed competency represented a problem that employees would be pleased to simply have removed. However, when asked whether “My job should be redesigned so this ability is not necessary,” only 16 percent agreed with very little variation across the six competency categories. Apparently, most employees considered it reasonable to meet this developmental challenge rather than finess it away through job redesign.

We asked additional questions about why employees targeted particular competencies for development. After they described their most important development need, the MPS 2005 participants were asked to agree or disagree that each of the following reasons was a factor as they sought to meet that need.

1. “I would be extending or fine-tuning my skills in an area of personal strength.” **(Strength)**
2. “I would be overcoming a deficiency or closing a gap in my skill set.” **(Gap)**
3. “I would be acquiring a new skill I have not attempted to learn before.” **(New)**
4. “I would be updating my proficiency in an area that has changed since I learned it last.” **(Update)**
5. “I would be trying again to learn something that I was not fully successful learning in the past.” **(Retry)**

The percentage of survey participants who said they followed each strategy is shown in Figure 5. Responses for each reason are displayed by the competency category of survey participants’ most important development need.

Figure 5. Percentage Agreeing With Five Reasons to Seek Training⁶¹

	STRENGTH %	GAP %	NEW %	UPDATE %	RETRY %
KNOWLEDGE	79	76	46	60	25
LANGUAGE	73	69	25	42	33
SOCIAL	75	65	27	W43	29
REASONING	78	79	46	62	30
MOTIVATION	70	47	13	18	29
MENTAL STYLE	80	69	21	63	39

The data in Figure 5 reveal several patterns. For all six types of competencies employees generally see themselves as building on strengths they already possess. Those targeting Motivation competencies are somewhat less likely to agree with this statement, consistent with the view that more employees regard this competency as a personal characteristic in which they are deficient. Also note that those who believe they need to develop a motivational competency are less likely to see themselves as “overcoming a deficiency” by attempting to develop this competency and are less likely to believe that attempts to develop this less trainable personal characteristic will be successful. In contrast, those

⁶¹ Participants were asked to indicate agreement or disagreement with each strategy rather than to choose among strategies. For this reason, percentages do not total 100 percent.

who target Mental Style competencies have expectations about closing their competency gap that are similar to those who target the other four, more trainable, competencies. They may be more likely to believe this competency can be improved.

The middle column in Figure 5 summarizes employee beliefs that they will encounter new content when they attend training for their most needed competency. The results correspond to what we know about the nature of these competencies. The facts and procedures that make up Knowledge competencies change continuously as Federal jobs evolve within a changing workforce; the same is true of the trainable component of applied Reasoning competencies, such as quantitative analysis software, tools, and techniques. The trainable cultural aspects of Social competencies and the trainable aspects of Language change more slowly. Few of our survey participants expect to encounter new material in training for Motivation or Mental Style competencies.

The pattern of agreement in the Update column is very similar to that in the New column, with one difference; Knowledge and Reasoning competencies are most driven by external change, followed by Social and Language competencies. As we would expect, Motivation competencies do not require updates. Once again, Mental Style competencies do not fit the pattern. In general, Federal employees believe that they are subject to change—and that training is a way to keep up with this change.

The right-hand column summarizes data of particular interest—the percentage of survey participants that would be pursuing training of their target competency again after having attempted to master it at least once in the past. Knowledge competencies require the fewest retries, and Language, Social and Reasoning competencies require somewhat more. The responses for Motivational competencies are similar to the response pattern for the three moderately trainable competencies. The percentage of retries for Mental Style competencies is noticeably higher than the rate for any of the others.

The results in Figure 5 suggest that many Federal employees at least at some level recognize Motivational competencies as less responsive to training. Thus, employees who believe they have deficiencies in these competencies are less likely to pursue training to develop them, and perhaps waste fewer resources. However, employees who perceive a deficiency in their Mental Style competencies are more likely to see training as a possible path to improvement. Increasing employee knowledge of trainability issues seems likely to decrease training that targets less trainable competencies, saving resources and reducing frustration.

Training methods. The MPS 2005 asked employees directly to rate how effective five different training methods would be in helping them develop their most needed competency. We asked MPS 2005 participants, “How effective do you think each of the following strategies would be for developing the particular skill or ability you have targeted?” The training methods were as follows:

1. “Self-directed study using books, web sites, CDs, DVDs, videos, etc.” (**Self-Study**)
2. “Online classroom learning with an instructor and other class members” (**Web**)
3. “Developmental assignments or other on-the-job training” (**On-the-Job**)
4. “Mentoring or coaching from a more experienced coworker” (**Mentor**)
5. “Face-to-face classroom training classes or educational coursework” (**Classroom**)

The percentage of survey participants that expressed confidence in each strategy is shown in Figure 6, displayed by the competency category of their most important development need.

Figure 6. Percentage Agreeing That Each Training Method Would Be Effective For Their Training Need, by Competency Category.

	SELF-STUDY %	WEB %	ON-THE-JOB %	MENTOR %	CLASSROOM %
KNOWLEDGE	65	69	87	85	91
LANGUAGE	59	55	83	79	88
SOCIAL	54	57	77	86	81
REASONING	68	77	85	87	95
MOTIVATION	39	50	66	80	66
MENTAL STYLE	70	61	81	83	81

In contrast to what was discussed earlier, these results seem to reflect a general belief in trainability of all competency categories. Additionally, most employees see most training methods as effective, across categories. Highly trainable Knowledge competencies are seen as more responsive to all the listed types of training than moderately trainable competencies, and both of these categories of competencies are seen as more trainable than those in the less trainable competencies. Once again we see general agreement by Federal employees about the relative trainability of competencies, but many employees may still pursue training that is unlikely to be successful.

This table provides further evidence that Federal employees see competencies in the two less trainable competency categories differently. Motivational competencies are less likely to be seen as trainable across methods—although confidence in mentoring is high

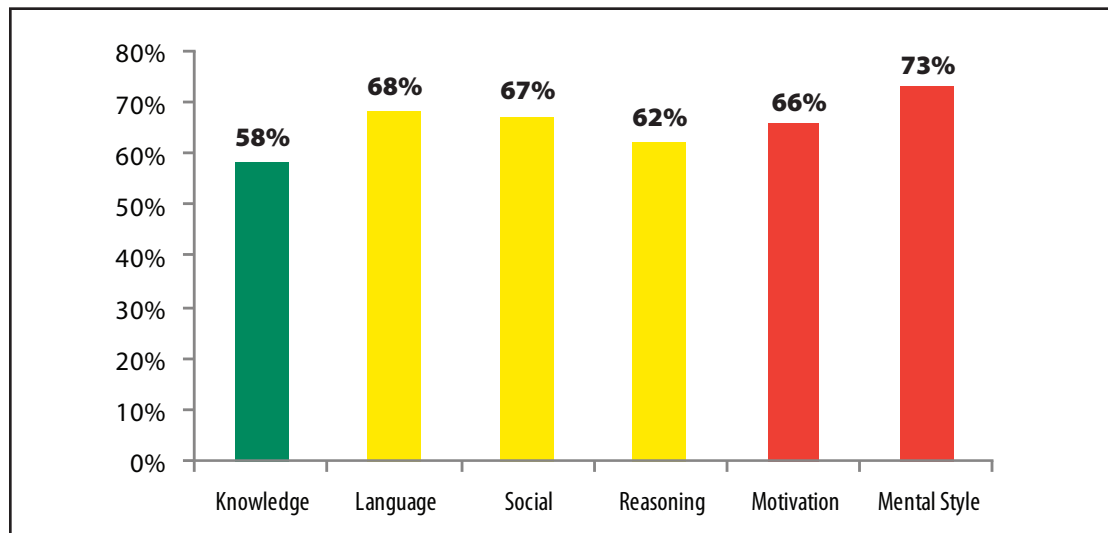
for all competency groups.⁶² Mental Style competencies are seen as more trainable than moderately trainable competencies that research suggests can be improved by training. These beliefs about the ability of training to develop competencies can influence how Federal employees seek training for their most acutely perceived development need.

Workplace Constraints

A number of factors in a Federal employee's work environment influence the expectations employees have about training and the plans they make to obtain it. The MPS 2005 contained three questions about support for training that allow us to examine this factor.

Sufficient training? Figure 7 summarizes survey participants' level of agreement with, "I receive the training I need to perform my job." In previous research we have identified agreement with this question as indicating that basic training to perform the fundamentals of the job has been received. Figure 7 shows the percentage agreeing with this question that targeted each type of competency as their most important to develop.

**Figure 7. Percentage Agreeing With
"I receive the training I need to perform my job."**

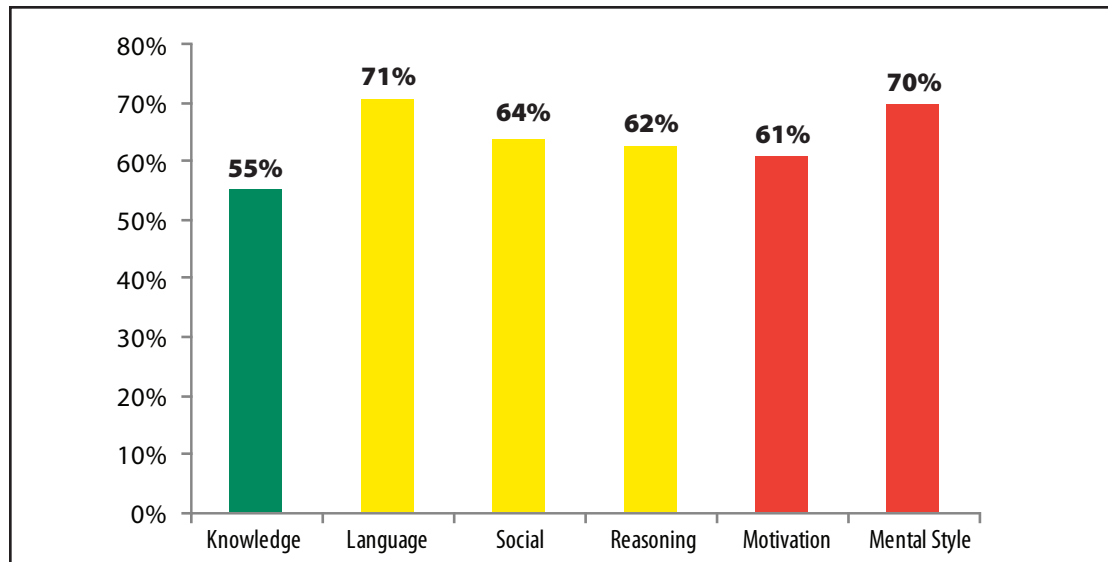


Responses to this question indicate that those who say they need training in a Knowledge competency are less happy with the basic training they receive to do their jobs. It makes sense that they would target a job-related knowledge competency as a training need. In contrast, employees looking for training in one of the less trainable competencies are more likely to report being satisfied with the training they received to perform their jobs. One possible reason is that their job-related training needs are satisfied and they are targeting a competency that will be developed over a longer period.

⁶² Unlike other forms of instruction, mentoring does not focus exclusively on a small set of objectives; mentors often offer advice in many areas. For employees who are seeking to develop less trainable competencies, this advice may include workarounds such as partnering or substituting strengths in other competencies for the one that is weak.

Organizational support. Figure 8 summarizes agreement with the statement, “I am given a real opportunity to develop my skills in my organization” shown by each participant’s most important competency to develop.

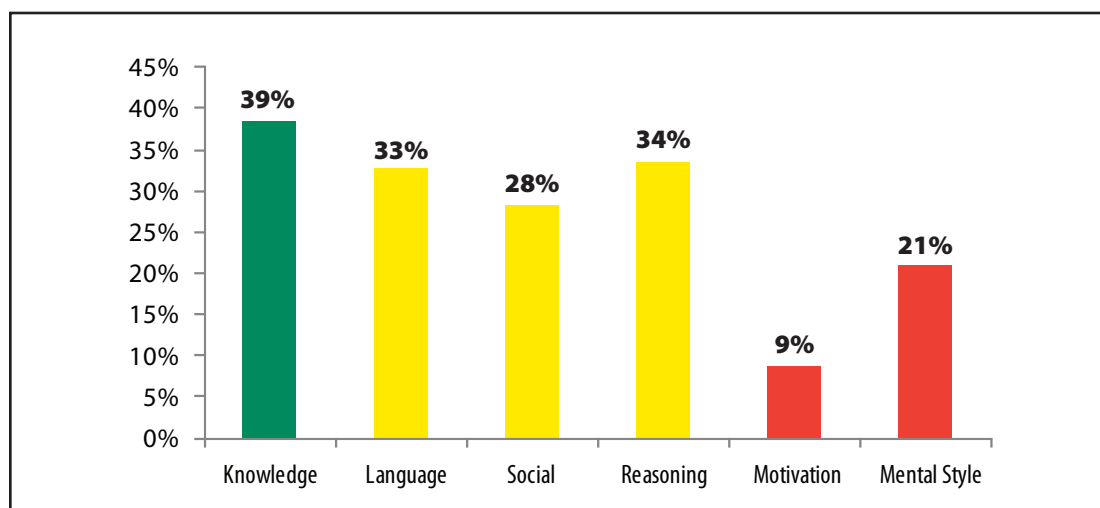
**Figure 8. Percentage Agreeing With
“I am given a real opportunity to develop my skills in my organization.”**



Responses to this question indicate that employees who target Knowledge competencies are less likely to believe they are being given a chance to develop their skills. Greater organizational support for learning is reported by employees who target moderately and less trainable competencies. This may mean that employees who are constrained in their training choices to knowledge topics that are closely related to their jobs believe that their organization does not support their wider aspirations for development. Conversely, employees who are encouraged to take the training they want will target less trainable competencies, many of which are applicable to a wider variety of jobs and useful for career advancement. Even when this training is less successful, employees may report greater organizational support simply because their organization has not constrained their training choices.

Career development planning. We also asked MPS 2005 participants if their most important training need was included on a formal career development plan. The percentage of survey participants indicating that it was included on such a plan is summarized by their most needed competency category in Figure 9. Something about the career planning process may be working to screen attempts to get unrealistic training. People who desire training in less trainable competencies tend not to have these competencies on career development plans. Our data do not tell us whether they do not have such plans or do have them, but pursue their less trainable competencies “off-plan.” This is a particularly interesting finding in light of the relatively low percentage (40 percent) of Federal employees who report that their training needs are assessed.

Figure 9. Percentage of Employees Indicating That Their Most Needed Competency Was Included in a Career Development Plan



Solutions—Setting Employee Expectations

The findings from the MPS 2005 survey questions about training indicate that some employees may seek training for less trainable competencies. Training funds may be spent more effectively and employee frustration may be reduced if employees and their supervisors are better informed about competency trainability—and use this information to seek training realistically. The following strategies may be effective in accomplishing these goals.

Highlight trainability. Competency trainability should be included in how employees, supervisors and agencies discuss training. Because this is an issue that affects the Federal workforce as a whole, the communication should come from a central source. OPM is the appropriate source for this communication. Key messages could specify which competencies are less trainable, the effects of individual abilities on learning, and how these factors should affect training decisions.

OPM should also consider developing an online Employee Development Guide. OPM has helped agency personnel to make better decisions about assessment tools through the availability of the online Assessment Decision Guide.⁶³ This guide distills information about the relative strengths of employee selection tools into practical guidance that agencies can use to improve assessment in their hiring processes. OPM could build on this success by creating a similar online Employee Development Guide that educates agency personnel about competency trainability, use of prerequisite requirements and pretesting to establish employee readiness to learn, effective instructional design, and other information that will help them make good training decisions.

⁶³ Available on the Web at <http://apps.opm.gov/ADT/content.aspx>.

Train supervisors. The MSPB’s research has shown that Federal employees, for the most part, trust their supervisors—more than they trust higher-level management or policy-makers in their agencies.⁶⁴ Supervisors are the front-line contact with employees and deal with a number of potentially sensitive issues, including training requests. Supervisors are ideally placed to discuss competency trainability with their employees and make sure it is considered as a factor.

Supervisor training typically includes topics such as employee development strategies and how to evaluate employee abilities and performance. Future supervisor training should cover competency trainability. This training will be particularly effective if it is accompanied by centrally available information on how to make the most of it.

Career development planning. MPS results show that career development planning is associated with a reduced tendency to pursue training for less trainable competencies. This makes sense, since discussions between supervisors and employees about career goals will likely touch upon the employee’s strengths and weaknesses. When conducted with preparation and insight, such discussions include supervisor recommendations about what developmental experiences an employee seems well-prepared to undertake. By advising pursuit of realistic goals, supervisors may be indirectly—or even directly—steering employees away from training in less trainable competencies.

At 40 percent, the incidence of career development planning among Federal employees is not as high as it should be. We recommend that agencies require discussions between supervisors and employees about career development at least twice a year and keep a record of decisions made during these discussions. Increased use of career development planning can be expected to reduce requests for training in less trainable competencies, and even moderately trainable competencies for which an employee lacks talent or sufficient preparation.

Summary

In this chapter, we examined the competencies Federal employees say they need to develop, based on the results of a Governmentwide survey. We also explored the relationship between these responses and other training-related questions on the survey.

Forty percent of the participants reported training needs for highly trainable competencies while only three percent of employees targeted less trainable competencies. Fifty-seven percent sought moderately trainable competencies. Employees seeking training for some less trainable competencies are more likely to be “retrying” training that was not previously successful. These issues are complicated by employee beliefs that most abilities are trainable. OPM, agencies and supervisors can set employees’ expectations about training more appropriately by informing them about competency trainability.

In the next chapter, we examine data collected from the MPS 2007 about the most recent job-related training Federal employees attended.

⁶⁴ U.S. Merit Systems Protection Board, *Accomplishing Our Mission: Results of the Merit Principles Survey 2005*, Washington, DC, February 2007.



CHAPTER 4 – THE TRAINING EMPLOYEES RECEIVE

In this chapter, we use the results from the MPS 2007 to examine the training classes Federal employees attend and the degree to which they target more trainable or less trainable competencies. The MPS 2007 also included more specific questions about each participant's most recent training experience. The participants' responses are summarized in this chapter.

Only a little more than half (53 percent) of these survey participants were satisfied with the training they received for their jobs. When asked about the different types of training they received, six out of ten (59 percent) participants said they had attended one or more job-related trainings during the past year. In contrast, eight of ten (80 percent) had attended agency-required training; just over a third (35 percent) had attended training “of general interest to government employees”; 12 percent had attended training that would help them obtain a promotion; and 22 percent reported attending at least one instance of training that had “little or no real relation to your present or possible future job responsibilities.”

Our focus in this chapter will be on job-related training. We will examine factors that come into play before training occurs, during training, and back on the job after training.

Training Classes and Trainability

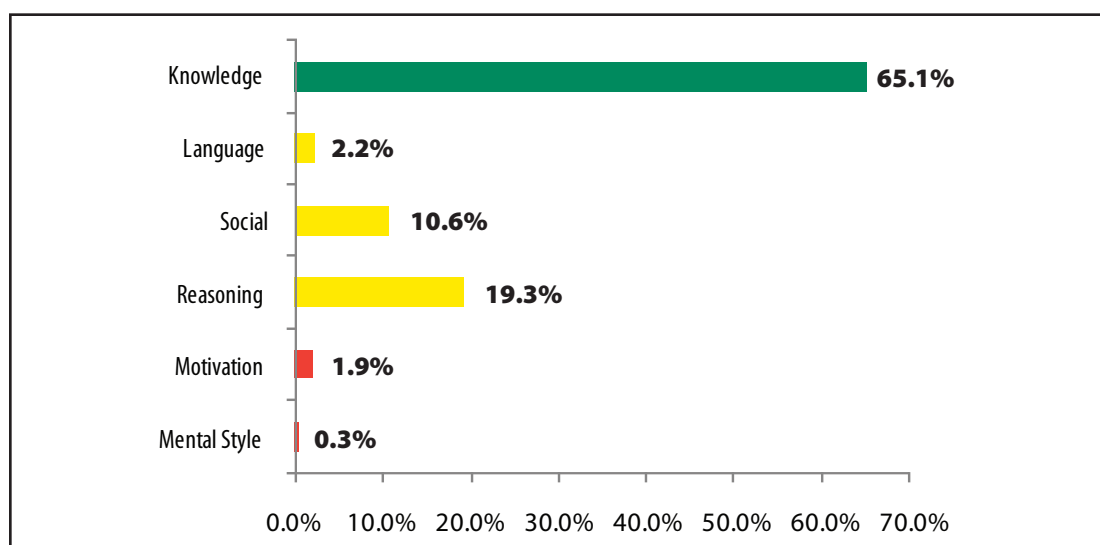
MPS 2007 questions about training experiences focused on a cross-section of the several training instances most employees had experienced in the past year. We obtained a cross-sectional sample of training by focusing on each survey participant's most recent training. Our focus was also limited to job-related training funded by agencies. We asked MPS 2007 participants the following open-ended question:

“Please describe in a few words (no more than a sentence) the topic of the most recent formal training closely related to the duties of your current job you received that was paid for or otherwise provided by the Federal Government.”

Survey participants characterized their most recent training experience by reporting the name of the class or stating its general topic. As with the two previous open-ended questions discussed in this report, each participant's response was coded into one of the six competency categories described in Chapter 2. A summary of the responses by category is presented in Figure 10.

Federal employees report a highly trainable Knowledge competency as the target of their most recent job-related training in nearly two-thirds (65.7 percent) of cases. Moderately trainable competencies were targeted by almost two-fifths (32.1 percent) of employees, and less trainable competencies were the focus of training in just over two percent (2.2 percent) of the training episodes reported by survey participants.

Figure 10. Most Recent Job-Related Training by Competency Category



In light of employee beliefs about the high trainability of moderately and less trainable competencies, it is surprising that more training instances were not reported in these competency categories. It may be that employees seek such opportunities less often than reported training needs suggest. Or supervisors or other agency decision makers may deny such training requests because they are unlikely to lead to successful competency development.

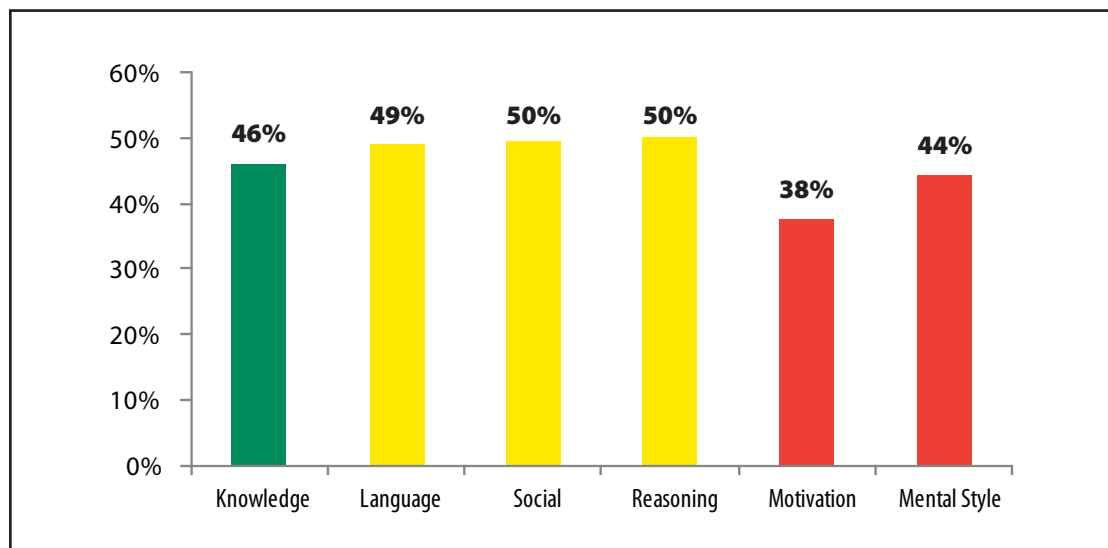
Despite the relatively low percentage of Federal employees attending training for less trainable competencies, it is important to examine this issue. In a Federal workforce of nearly two million employees, many of whom seek more than one training experience each year, even this relatively small percentage represents tens of thousands of instances of training. Understanding the factors associated with employee decisions to attend training that is less likely to be productive may help agency decision makers expend fewer resources on unproductive training.

Before Training

MPS 2007 participants answered several questions about pre-training factors that influenced their training experience.

Training needs assessment. Figure 11 summarizes MPS 2007 participant agreement with the statement, “My training needs are assessed.” displayed by the competency category of their most recent job-related training. According to responses from all survey participants, training needs assessment occurs for less than half (45 percent) of employees. When it does occur, Figure 11 suggests it is slightly more likely to be associated with training in moderately trainable rather than less trainable competencies.

Figure 11. Percentage Agreeing With “My training needs are assessed.”



A number of factors should be considered when conducting an effective training needs assessment, including employee abilities and potential to learn more from some developmental experiences than from others. The MPS 2007 found that just under a third (31 percent) of Federal employees report that their training needs are not assessed. A similar number (29 percent) do not know whether their training needs are assessed and acknowledge that this might be happening in some way without their input. Among the forty percent of employees who report that their needs are assessed, the most common approach is informal (31 percent). The incidence and quality of training needs assessment should be increased to improve agency training decisions. As these procedures are improved, trainability considerations should be included as factors to consider when making training decisions. More needs assessment might result in less attendance at training for less trainable competencies.

Requested versus required. MPS 2007 participants were asked to indicate which of five options best described their reasons for taking their most recent job-related training. Their responses are summarized in Figure 12. The full-length response options for the column titles in Figure 11 are as follows:

1. “It is required for employees in my occupation or specialty.” (**Required by Job**)
2. “My supervisor or other agency leader requested or required that I take it.” (**Required by Supervisor**)
3. “I requested to take it because I thought it would increase my job-related abilities.” (**Requested to Improve**)
4. “I requested it because it would improve my ability to get a promotion or different job.” (**Requested to be Promoted**)
5. “I requested to take it for a different reason.” (**Requested Other**)

Figure 12. Percentage Agreeing With Five Reasons to Attend Most Recent Training.⁶⁵

	REQUIRED BY JOB %	REQUIRED BY SUPERVISOR %	REQUESTED TO IMPROVE %	REQUESTED TO BE PROMOTED %	REQUESTED OTHER %
KNOWLEDGE	47	16	23	2	12
LANGUAGE	26	23	36	2	13
SOCIAL	31	26	27	5	12
REASONING	38	16	35	1	10
MOTIVATION	72	7	8	0.1	12
MENTAL STYLE	38	18	39	0.4	5

Several patterns are noteworthy. First, Knowledge competencies, which are closely job-related, are pursued largely because of job requirements. Second, moderately trainable competencies are often pursued on the employee's initiative. Finally, these data differentiate between the two less trainable competencies. Motivational competencies are pursued as training topics largely because of job requirements. Mental Style competencies also have a high incidence of job requirement but are also sought by employees for self-improvement. As discussed previously, competency trainability should be considered by agencies and supervisors when requesting or requiring that employees attend training. It should play a role in reviewing employee requests for training as well.

Workplace influences. Figure 13 summarizes survey participant agreement with three statements that shed additional light on employee motivation to attend training. The full-length response options for the column titles in Figure 13 are as follows:

1. "Other employees in my work unit have had the same training in the past year." (**Other Employee**)
2. "I would recommend this training to others who do the same kind of work I do." (**I Would Recommend**)
3. "It would be more effective to learn this type of knowledge, skill or ability on the job." (**Learn on the Job**)

⁶⁵ Participants were required to choose their primary reason for attending training. For this reason, percentages in each row will sum to approximately 100 percent, within rounding error.

Figure 13. Percentage Agreeing With Three Statements About Most Recent Training.

	OTHER EMPLOYEES %	I WOULD RECOMMEND %	LEARN ON THE JOB %
KNOWLEDGE	66	80	29
LANGUAGE	55	86	38
SOCIAL	56	80	21
REASONING	64	77	28
MOTIVATION	82	83	14
MENTAL STYLE	74	88	43

These data suggest several things about why employees go to training for different competencies. First, the greater tendency for employees in the same work unit to attend Motivation and Mental Style training, along with the tendency for such training to be a requirement, suggests that agencies may be sending groups of employees to such training without attention to whether each person will benefit. To the extent this occurs, agencies should rethink such practices. Coworkers might enjoy attending a motivational or creativity workshop together, but the learning benefit may not justify the expense. Also, employees have a high tendency to recommend training of all types to others, a contributing factor to training attendance that is not related to an individual employee's ability to benefit from the training.

Finally, when asked whether "It would be more effective for employees to learn this type of knowledge, skill or ability on the job," most participants disagreed. However, a large proportion was in relatively high agreement that Mental Style competencies can be learned on the job. They regarded these less trainable competencies as trainable, although the "training" might be more effective in a non-training setting. Employees have very different expectations for developing Motivation and Mental Style competencies, even though research indicates they are both less trainable.

Training Evaluation

We do not have training evaluation data from courses taken by MPS 2007 participants. However, the survey did contain several questions that asked participants to evaluate their training.

Formal training evaluation. Most models of training evaluation recognize that the value of training can be measured at four distinct levels. The Reaction level captures how much employees enjoy the training. The Learning level assesses how much targeted

competencies increased as a result of training. Transfer is the degree to which this learning makes a difference in performance on the job. The Results level attempts to measure how any changed performance affects the mission accomplishment of the employee's organization. Some models add a fifth level, Return on Investment, which calculates a dollar value for improvements resulting from training.⁶⁶

The MPS 2007 questions captured participant perspectives on the first three levels of training evaluation—it did not seem feasible to have them estimate the other two levels. Their agreement that their most recent job-related training was effective at the Reaction, Learning and Transfer evaluation levels is summarized in Figure 14. The statements participants were asked to agree or disagree with are as follows:

4. "I enjoyed this training." (**Reaction**)
5. "Training was effective in teaching what it was designed to teach." (**Learning**)
6. "What I have learned from this training either has, or will likely improve my job performance." (**Transfer**)

Figure 14. Percentage of Employees Agreeing That Training Is Effective At Three Levels of Training Evaluation

	REACTION %	LEARNING %	TRANSFER %
KNOWLEDGE	74	84	70
LANGUAGE	87	91	77
SOCIAL	80	86	70
REASONING	69	82	66
MOTIVATION	60	80	55
MENTAL STYLE	84	91	80

These data allow us to see differences between evaluations of training received for different competency types. Employees report learning and expect transfer from training for most competencies. Furthermore, they generally enjoy training. Motivational training is somewhat less well-regarded and less transfer is reported. Mental Style competency training, however, is regarded by employees as enjoyable and effective, increasing their desire to attend it and recommend it to others.

⁶⁶ Jack J. Phillips, *Return on Investment in Training and Performance Improvement Programs*, Butterworth-Heinemann Publishers, Oxford, UK, April 2003.

Less formal evaluation. Figure 15 summarizes MPS 2007 participants’ agreement with two additional training evaluation-related statements. Participants were asked to agree or disagree with the following statements:

1. “Training consisted mostly of things I did not know before taking the training.” (**Things I Didn’t Know**)
2. “Obstacles in my work setting that I cannot control prevent me from using the training to improve my job performance.” (**Obstacles in Workplace**)

Figure 15. Percentage of Employees Agreeing That Additional Factors Were Important.

	THINGS I DIDN'T KNOW %	OBSTACLES IN WORKPLACE %
KNOWLEDGE	43	14
LANGUAGE	36	19
SOCIAL	37	15
REASONING	50	15
MOTIVATION	16	9
MENTAL STYLE	51	32

Asking training participants how much of the training content they did not previously know is a rule-of-thumb assessment of training that focuses on facts, procedures, policies—in other words, Knowledge competencies.⁶⁷ When information passes through conscious awareness as it is learned, those learning it are in a good position to evaluate how much of it is unfamiliar. This rule of thumb is less useful when the training involves competencies other than or in addition to knowledge—those that have talent and practiced skill components.

Note the relatively high level of agreement that Mental Style training contains new material. Such training may be filled with examples and other new approaches and could well seem new, but it is still a less trainable competency. Training attendees may be convinced that they have developed this competency simply because they have seen unfamiliar information. Motivational training, on the other hand, is recognized as not containing new content.

⁶⁷ U.S. Merit Systems Protection Board, “10-Minute Training Evaluation for Busy Supervisors,” *Issues of Merit*, Washington, DC, April 2009.

The question about obstacles in the workplace also reveals interesting attitudes about training. This question can enable those who have attended training to escape responsibility if it does not increase their job performance by blaming their lack of improvement on the work environment. However, very few survey participants (15 percent overall) take this “out.” Responses from those who attended training for less trainable competencies are particularly interesting. Though those who attended Motivational training do not expect it to work, they also do not blame the work environment. Attendees of Mental Style training, however, have high expectations and attribute failure to barriers in the workplace rather than to the less trainable nature of the competency.

Solutions—Training Needs Analysis

The MPS 2007 results we have reviewed suggest that training needs analysis can play a role in discouraging employees from targeting less trainable competencies for training. In this section, we discuss several ways to improve the impact of training needs analysis.

Individual needs analysis. Supervisors should conduct a needs analysis with each employee. An effective analysis should identify the job-relevant competencies that each employee should develop. This is more than the simple “gap analysis” that identifies employee deficiencies. It should also identify which of those deficiencies can be remediated and which are less trainable competencies that the employee should learn to work around or moderately-trainable competencies for which the employee lacks natural ability.

Individual needs analysis should identify areas of employee strength and these competencies should be considered for development to increase organizational effectiveness, even if this would not close a gap in the employee’s skills set.

Group needs analysis. Supervisors and higher-level leaders should also conduct periodic analyses of the competencies needed by their work groups. Some competencies that are important to an organization’s work may not be needed by all employees in that group, even if they are all in the same occupational series. Less trainable competencies should be added to the work group by hiring people who already possess them (see Chapter 5). Pre-training assessment should be used to determine which employees are best prepared to benefit from training that addresses moderately trainable competencies.

Careful attention to which employees can and should benefit from training can reduce unproductive training and save resources.

Well-designed training. Competency trainability issues should be added to the list of criteria used to select training for Federal employees. The mere existence of a training course should not constitute evidence that the training is effective. Training courses designed to develop less trainable competencies should be accompanied by evidence that such training can be effective. Training for both less trainable and moderately trainable competencies should communicate prerequisites and provide pretesting procedures that can be used to determine whether potential employees have the ability to benefit from the training.

Training evaluation. Training evaluation procedures should include assessment of whether participants are being adequately screened to ensure they can benefit from the training. Evaluation should also include tracking and analysis of the extent to which those who attend training make additional attempts to learn the same training content.

Summary

In this chapter, we examined the training experiences of Federal employees by classifying their most recent job-related training into one of six competency categories. We explored the relationship between the targeted competency and responses to other training questions.

The results indicate that many employees attend training to develop highly and moderately trainable competencies, and relatively few attend training for less trainable competencies. Workplace support for training seems to encourage development of moderately trainable competencies, which employees seek to improve their skills.

Attendance at training for some less trainable Motivational competencies is sometimes imposed as a requirement. Training for less trainable Mental Style competencies is seen as enjoyable, is recommended by other employees, and is seen as likely to improve job performance if not for barriers in the workplace. These factors encourage employees to attend training that is less likely to change the competencies it targets.

In the next chapter, we examine the trainability of competencies Federal employees believe are most important to success in their type of job, independent of their own training needs and experiences.



CHAPTER 5 – COMPETENCIES NEEDED ON THE JOB

The purpose of this chapter is to examine the competencies that Federal employees believe are most important to be successful in their type of job from the perspective of whether the competency is highly, moderately, or less trainable. The MPS 2007 included a set of questions that addressed the skill or ability most critical for each survey participant's current job. Responses to these questions are summarized in this chapter.

The MPS 2007 survey revealed a Federal workforce that is largely satisfied with their agencies and work environments. Nearly two thirds (65 percent) believed their talents were used well in their workplace.⁶⁸ We asked these participants to tell us more about the workforce's capabilities.

Job-Critical Abilities and Trainability

Analysis of the training needs identified by MPS 2005 participants highlighted a factor that might influence reports of the skills and abilities needed by the workforce in general: Employees may want to be trained in certain abilities, not because they are needed for the job, but because they enhance opportunities for promotion or movement to a different job.⁶⁹ Consistent with this concern, a majority (84 percent) of MPS 2005 participants believe that “job-related skills and training should be used to determine pay.” Federal employees rank trained skills second only to job performance (99 percent) as a factor that should determine pay. This ranks them ahead of work experience (82 percent), work unit performance (73 percent), salary levels in occupation (71 percent), agency performance (55 percent), and length of service (40 percent).

To elicit perceptions of critical skill and ability needs that were less influenced by career ambition and related issues, we created a question about hiring to meet the demands of organizational growth. MPS 2007 participants were asked this open-ended question:

“Your agency is hiring more staff as a result of increased funding and expansion of its mission. You have been asked to help hire a new employee who will be doing the same type and level of work that you do, but will be part of a different work team.

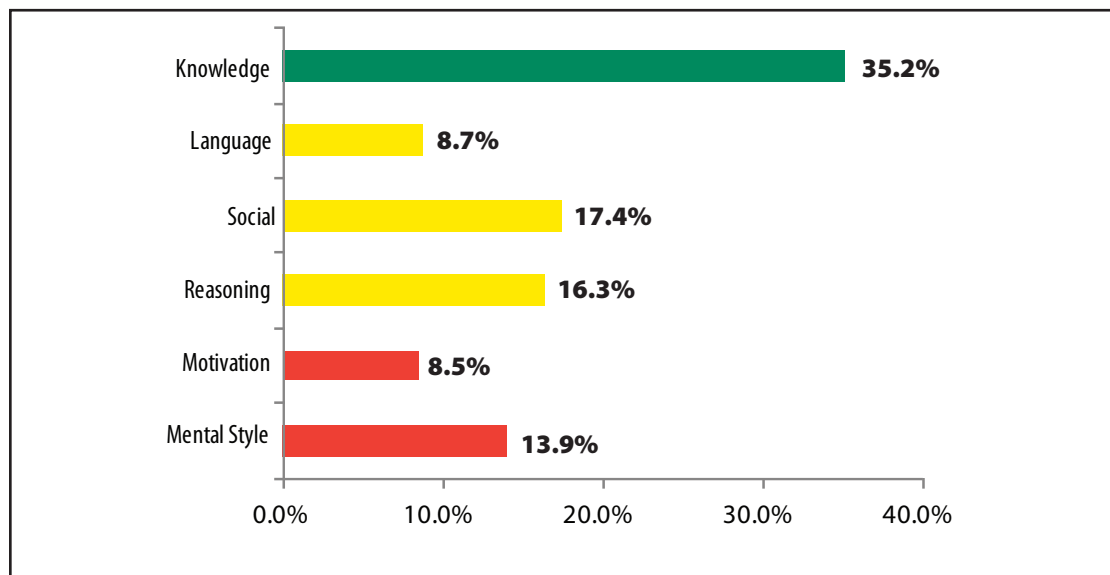
Please describe in a few words or phrases the most important knowledge, skill, or ability this new employee needs to do his or her job well.”

⁶⁸ U.S. Merit Systems Protection Board, *Managing for Employee Engagement: Communication, Connection and Courage*, Washington, DC, July 2009.

⁶⁹ A previous MSPB report identified a number of reasons employees request and attend training that are not related to increasing performance in their current job. See U.S. Merit Systems Protection Board, *Leadership for Change: Human Resource Development in the Federal Government*, Washington, DC, July 1995.

Competency category. As with the two previous open-ended training questions, responses to this question were coded into the six competency categories described in Chapter 2. Just over a third (35.2 percent) of the survey participants reported that a trainable Knowledge competency is most critical for success in their current jobs. Almost half (42.3 percent) of the participants identified a competency in one of the three moderately trainable categories. About a fifth (22.5 percent) indicate that a competency in one of the two less trainable categories is most critical for job success. The distribution of most critical job needs across the six competency types is summarized in Figure 16.

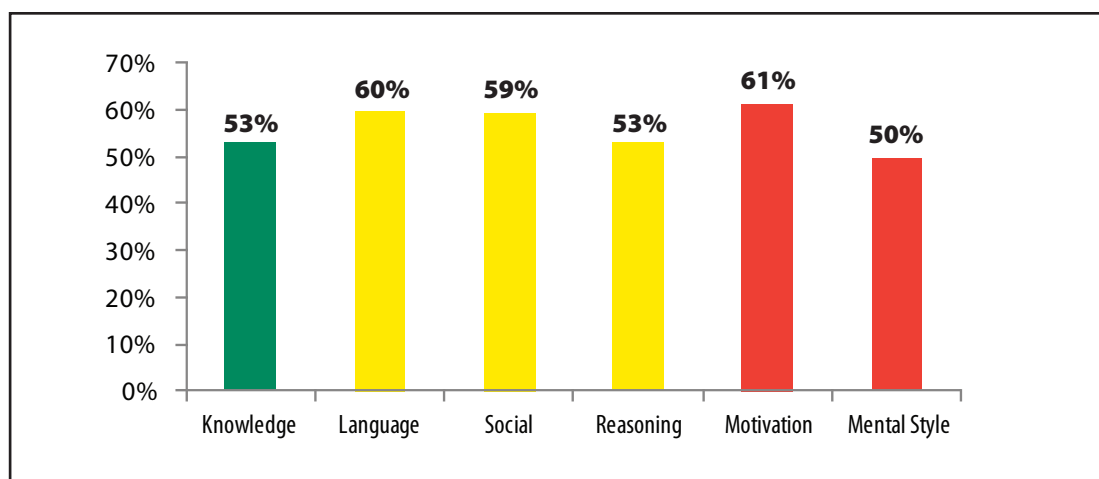
Figure 16. Most Critical Job Need by Competency Category



These results show that, in the perception of Federal employees, less trainable competencies are important to job success, even if they are unlikely to be reported as a personal development need. When supervisors, or employees in the role of subject-matter experts for their own jobs, consider the competencies new hires will need, they may identify competencies from any of the six categories.

When are competencies needed? The MPS 2007 also asked whether this most critical ability was important to have during the first week on the job. The percentage of survey participants agreeing their most important job ability was needed immediately is summarized in Figure 17 by competency category. Once again, we see a difference between the less trainable Motivation and Mental Style competency categories. Motivation competencies are regarded as most necessary early in employment, and Mental Style competencies are least necessary, although the differences among all six competency categories are not large, indicating that all these competencies are regarded as equally necessary early in employment.

Figure 17. Percentage of Employees Indicating That the Most Critical Competency Is Needed During the First Week on the Job



Hiring officials and the human resources (HR) specialists who support them must work under several constraints when they choose assessments to use in the hiring process. Such factors as expense, time, and applicant reaction to the assessments are foremost in their awareness. Unfortunately, quality factors such as relative validity of different assessment options are often of less concern and relative trainability of critical skills is likely to be a foreign concept to HR specialists. Unless they are educated about the relative trainability of the different critical competencies, hiring officials are likely to focus on other factors in deciding what to assess. Critical competencies that could be learned on the job may be targeted in selection assessments because they are needed quickly, with less or no attention given to less trainable competencies.

If less trainable critical competencies are not acquired during hiring, they are left to become targets of training on the job. As discussed earlier, this can lead to employee frustration and wasted resources, as well as failure to adequately add these competencies to the workforce where they are needed to accomplish work.

Training and experience. Competency trainability can be problematic in another way in the hiring process. Previous MSPB research has confirmed a pattern well-known to Federal HR specialists. Federal hiring makes great use of resumes, rating schedules, and other assessments in which job applicants report their job-relevant training and experience.⁷⁰ The process of evaluating such self-reported information is less reliable than are other measures of applicant achievements such as the accomplishment record and the structured interview. However, these measures are well-entrenched in practice and are likely to remain so.

Competency trainability likely contributes to the unreliability of training and experience assessment. These assessments give applicants credit for possessing competencies on the

⁷⁰ U.S. Merit Systems Protection Board, *Reforming Federal Hiring: Beyond Faster and Cheaper*, Washington, DC, September 2006.

basis of completed coursework, usually in the absence of any verification that training has produced an improvement. Thus, when applicants have attended training for a less trainable competency and list this training on their resume or job application, training and experience assessments may credit them with possessing it. Each ineffective training class lowers the validity of training and experience measures and increases the odds that a less qualified person—who offers training attendance as evidence of competency development—will be hired or promoted. This does not imply any misrepresentation by the job applicants, who may themselves not realize that the training has not produced the intended result.⁷¹

When hiring processes rely on self-reported information, even the strategy of assessing for personal characteristics—less trainable competencies—may fail to add them to the workforce.

Solutions—Competencies and Hiring

Federal hiring can be improved if one understands how competencies differ in trainability. The following practices will help ensure that less and moderately trainable competencies are identified and, when needed, added to the skill set of the Federal workforce.

Analyze the job. Before assessment tools can be developed or purchased for use in hiring—even before a job announcement can be written—the job must be understood. In some cases a job analysis is available from previous hiring or from OPM if the occupation is present in many agencies. If not, a job analysis study should be undertaken using one of several established methodologies.⁷²

An important step in most job analyses involves linking job tasks to the abilities needed to perform them. The analysis should capture information about the trainability of each ability identified as important to a job. This information can be used to decide which abilities can be developed through training and which must be targeted during hiring.

Prioritize assessments. When resources permit, hiring processes should use multiple assessment procedures, ordered into two or more “hurdles” that progressively narrow the applicant pool to those best qualified for the job. Because of resource limitations, applicant fatigue, and other factors, not all critical competencies can be assessed. In deciding what to assess, HR professionals should focus on assessments for any less trainable competencies identified as important in the job analysis. If resources permit, assessments should also be included that target any moderately trainable competencies identified as important. Trainable competencies, even if they are critical, can be developed on the job or through training.

Use valid assessments. Hiring processes should include valid measures for all

⁷¹ Research has shown that people are generally poor evaluators of their own ability levels. See, for example, D. Dunning, K. Johnson, K. Ehrlinger, and J. Kruger, “Why people fail to recognize their own incompetence,” *Current Directions in Psychological Science* 12(3) (2003), 83–87.

⁷² See, for example, Prien et al., 2009.

competencies assessed in hiring. This means that appropriate procedures have been followed to develop the assessment and there is evidence that the assessment predicts the ability it is designed to measure. A number of factors are important in choosing assessments—this report focuses on those related to competency trainability. Selection officials should avoid using training and experience measures that credit applicants for competencies on the basis of lists of classes they have attended. Such measures are particularly poor evidence that applicants have acquired less trainable competencies.

Following these three practices should improve Federal hiring by allowing agencies to acquire less trainable competencies that are identified as important to the job.

Summary

In this chapter, we examined Federal employee beliefs about competency trainability by asking about the most critical competency for their type of job.

Results indicate that the full range of highly trainable, moderately trainable, and less trainable competencies is seen as important in the Federal workforce. Federal employee beliefs about their relative trainability are not completely accurate, supporting a concern about inefficiencies in hiring and training decisions.

Hiring effectiveness can be improved by considering competency trainability during job analysis and selection of assessments for hiring.

In the next chapter, we summarize the report's conclusions and present recommendations for improving training received by Federal employees.

CHAPTER 6 – CONCLUSIONS AND RECOMMENDATIONS

This chapter reviews this study’s findings about Federal employee training needs and the training courses they take and presents several recommendations intended to increase the effectiveness of Federal training and selection as well as fairness and employee perceptions of fairness of training decisions.

Conclusions

Some competencies are less trainable than are others. A review of professional literature related to competency modeling reveals that some competencies have a strong talent component that limits the ease and degree to which some employees can develop them. Employees who lack talent in one of these competencies will benefit less—sometimes substantially less—from training in this area. On the basis of our literature review, we divided competencies needed by Federal employees into six categories. Knowledge competencies are highly trainable; Language, Social, and Reasoning competencies are moderately trainable; and Motivation and Mental Style competencies are less trainable.

Though less trainable competencies are not as frequently reported as training needs, this does not mean training resources are being used effectively. Less trainable Motivation and Mental Style competencies are reported as training needs by only a small percentage of Federal employees. Though this is good news for the overall effectiveness of Federal training, it must be tempered by two observations. First, many Federal employees often target the moderately trainable Language, Social, and Reasoning competencies, which respond to training, but also have an inherent talent component that limits how well some people will learn to use them. Second, even highly trainable Knowledge competencies include advanced topics that require prerequisite learning. Employees who attempt advanced training without prerequisite knowledge may experience failure and frustration.

Highly trainable, moderately trainable, and less trainable competencies are all seen as important to job success in the Federal workforce. When asked about competencies critical for success in their type of job, participants in the 2005 and 2007 Merit Principles Surveys indicated that competencies at all three levels of trainability are important. All competencies are also frequently seen as needed during the first week on the job. This perception creates pressure to hire for urgently needed skills, even if they are trainable, rather than following the proven, longer-term strategy of hiring for critical, less trainable characteristics first, knowing that job knowledge, even if critical, can be trained for or otherwise learned on the job.

Many Federal employees have misconceptions about the trainability of competencies needed for job success. When asked if the competency most needed for success in their type of job is a less trainable “personal characteristic,” Federal employees as a group

responded in a way consistent with research findings; many believed that less trainable competencies were less trainable and fewer believed that highly trainable competencies were less trainable, with moderately trainable competencies falling in between. However, many employees also believe that competencies of all types are trainable, given the right training method. Employee perceptions of the value of training they attended—whether for high, moderate, or low trainable competencies—were that it was enjoyable, produced learning, and will transfer to the job.

Many Federal employees have misconceptions about competency trainability. Some will pursue training for moderately or less trainable competencies without adequate predisposition or preparation. This will result in frustration and wasted resources. Others will choose not to seek training that they might learn from, believing that it requires abilities they do not possess.

Only a small percentage of Federal employees report attending training for a less trainable competency. Federal employees may not seek such opportunities as much as their attitudes lead us to believe they will; decision makers may be effective in discouraging such requests or training developers may not often offer training for less trainable competencies.

Despite the relatively low percentage of Federal employees attending training for less trainable competencies, it is important to examine this issue. In a Federal workforce of nearly two million employees, many of whom seek more than one training experience each year, this relatively small percentage represents tens of thousands of instances of training.

Several workplace factors are associated with seeking and obtaining training for less trainable competencies. These factors may increase the frequency with which Federal employees seek training that is not likely to be successful.

Employees who reported a training need for some less trainable competencies were:

1. More likely to be “retrying” to learn after having been unsuccessful previously.
2. Less likely to expect agency support, perhaps recognizing that training is a less feasible solution.

Employees who attended training for a less trainable competency were:

1. Less likely to report that this competency is listed on a formal development plan than were employees who attended training for highly trainable or moderately trainable competencies.
2. Less likely to report that their training needs were assessed.
3. More likely to report that this training is an agency or job requirement.
4. More likely to request this training on their own initiative, rather than at the suggestion of their supervisor.
5. More likely to report that others in their work unit had attended the same training recently.
6. Likely to recommend this training to others.

Recommendations

The following four recommendations are for *supervisors* of Federal employees:

1. *Supervisors* should increase the frequency and quality of career development planning. This can be expected to increase the quality and positive impact of training in a number of ways, including ensuring that trainability considerations inform training decisions.
2. *Supervisors* should include in their review of employee training requests the trainability of the target competency and how prepared the employee is to benefit from the training. The supervisor should talk to the employee about these issues to reduce the incidence of unproductive training and reduce employee frustration with unsuccessful training.
3. *Supervisors* should conduct training needs assessments of their employees and consider how trainable identified needs are when developing training plans. This can reduce attendance at training for less trainable competencies. Motivated supervisors might take this practice to a higher level and conduct a more comprehensive “pre-training benefit analysis” that considers personal readiness, ability to practice new skills on the job, and reduction of possible obstacles to transfer of training to job performance.
4. *Supervisors* conducting needs analyses should not rely solely on identification of gaps between current and optimal employee ability levels. Such analyses do not determine whether training is a feasible strategy to close any identified gap or whether an employee has the ability or preparation to benefit from a training experience.

The following five recommendations are for decision makers in *Federal agencies*:

1. *Agencies* should track repeated attempts to learn the same training content. Such training data should be used to evaluate whether the number of “retries” is excessive and, if so, whether they can be reduced by increased screening for preparedness on the part of Federal employees. This information can also be used to identify training that has a low success rate owing to poor design, poor delivery, and other factors—including competency trainability.
2. *Agencies* should encourage the use of pre-training preparedness testing, meaningful training prerequisite requirements, and realistic previews of what training covers. These tools will make it easier for employees and their supervisors to determine whether training is likely to be successful. Programs that target moderately trainable or less trainable competencies should use pretesting to determine whether employees have the requisite skill or talent to benefit from the training. Such pre-testing should also be part of advanced courses in highly trainable competencies that presume prior knowledge or experience.
3. *Agencies* should use assessments of training and experience sparingly for selection and promotion decisions. Resumes and job applications often contain lists of classes taken that may not have produced any competency development. Hiring

officials should be especially wary of training experiences that targeted less trainable competencies. Even honest and well-intentioned employees may not be equipped to evaluate whether training has produced improvement in their abilities. Agencies are advised to use more valid assessment techniques that do not have the weaknesses of training and experience measures.⁷³

4. **Agencies** should focus selection for hiring and promotion on job-critical competencies that are not responsive to training as a first priority and moderately trainable critical competencies as a second priority, especially for entry and mid-level jobs. If the selection process will not be overburdened by additional testing, agencies may include assessments for critical competencies that are highly trainable as a third priority. This strategy appropriately focuses on acquiring abilities through selection that may not be easily developed through training on the job.
5. **Agencies** should reconsider sending large groups of employees from a work unit or larger organizational unit to the same training. Such training for less or moderately trainable competencies may not match the needs or preparedness of some employees and may not be a good use of agency resources.

The following recommendation is for the ***Office of Personnel Management***:

OPM should consider developing an online Employee Development Guide. OPM has helped agency personnel make better decisions about assessment tools by providing the online Assessment Decision Guide.⁷⁴ This guide distills information about the relative strengths of employee selection tools into practical guidance that agencies can use to improve assessment in their hiring processes. OPM can build on this success by creating a similar online Employee Development Guide that educates agency personnel about competency trainability, use of prerequisite requirements and pretesting to establish employee readiness to learn, effective instructional design, and other information that will help employees and their supervisors make good training decisions.

Current Federal training policy allows agencies a great degree of flexibility in making decisions about training. Agencies place most responsibility for training decisions with supervisors and employees; this approach has the great strengths of flexibility, customization, and rapid response to needs that would be lost by implementing strong central training policies. However guidance and dissemination of research findings and best practices by OPM would support agencies while maintaining the strengths of decision making at the local organizational level.

These findings from our Governmentwide study provide a strategic view of training and competency trainability issues as they pertain to the Federal workforce. The findings and their associated recommendations are intended to strengthen training practices in Federal agencies and foster better training decisions by Federal employees and their supervisors.

⁷³ U.S. Merit Systems Protection Board, *Reforming Federal Hiring: Beyond Faster and Cheaper*, Washington, DC, September 2006.

⁷⁴ Available on the Web at <http://apps.opm.gov/ADT/content.aspx> .



APPENDIX – STUDY METHODOLOGY

This appendix describes two primary methods we used to examine training needs and training experiences of Federal employees. The first was a literature review of published competency models and of research related to the trainability of different types of knowledge, skills, and abilities. The second was survey research centering on three open-ended questions placed on two Governmentwide surveys. The appendix closes with a description of the common coding scheme used to classify responses to the three open-ended questions.

Literature Review

The Merit Systems Protection Board (MSPB) reviewed published competency models for public and private sector jobs as well as the professional literature that describes and critiques competency modeling and job analysis. Of particular relevance to our study were competency models developed by Federal agencies and by the U.S. Office of Personnel Management (OPM).

The MSPB acknowledges the efforts of OPM and these agencies to conduct job analysis studies and build models of effective employee behavior and job competence. This work not only summarizes the information but provides a perspective on how to productively characterize the abilities needed to succeed in today's Federal workplace. The results of these studies helped us develop an initial structure to organize the knowledge, skills, and abilities that Federal employees regard as crucial to job success, believe they need developmental improvement in, and seek training in through their agencies.

We also reviewed professional literature on the several taxonomies used to classify training content, how competencies are identified and competency models developed, what research has identified as basic human abilities, and the relative extent to which these abilities are acquired through training and other formal learning experiences. The MSPB recognizes the expertise of psychologists, educators, and others who have researched and reported on these topics. Their results, openly shared within the scientific community, provide a perspective on which abilities are more responsive to improvement through formal training experiences.

Merit Principles Surveys

Our strategic focus in describing training and training needs of Federal employees requires us to take a Governmentwide view rather than focusing on training practices in a single agency or among a small set of individual employees. For this reason, this study required a Governmentwide research platform with which to gather data.

For the past two decades, the MSPB has conducted a periodic Governmentwide Merit Principles Survey (MPS) of Federal employees to solicit their perceptions of their jobs,

work environment, supervisors, and agencies. The MSPB uses these survey results to track the incidence of prohibited personnel practices and to assess the overall adherence to merit principles in Federal employment practices. The MPS was chosen as the data-gathering mechanism for this report. Data were collected during the last two administrations of the MPS.

MPS 2005. The Merit Principles Survey 2005 was administered during the summer and early fall of 2005 to almost 80,000 full-time, non-seasonal, permanent Federal employees in the 24 largest executive agencies. Participants were selected to represent both supervisors and nonsupervisors, each participating agency, and the Federal workforce as a whole. A total of 36,926 participants completed the MPS 2005 for a 50 percent participation rate.⁷⁵

MPS 2007. The Merit Principles Survey 2007 was administered in the fall of 2007 to nearly 70,000 Federal employees. Sampling and administration strategies were similar to those used in the MPS 2005. The sample represented Federal employees from 30 executive agencies and included both nonsupervisory employees and supervisors at all levels. A total of 41,577 participants completed the MPS 2007, yielding a response rate of 60 percent.⁷⁶

MPS 2005 and MPS 2007 participants provided their perspectives on the quality of their work environment and their supervisors, the health of the Federal merit system and their training and development needs. These survey participants expended extra time and reflective effort to respond to our open-ended questions, describing their training needs and experiences at length. It is the analysis of this descriptive data that allowed us to examine the trainability level of the knowledge, skills, and abilities they want to acquire.

Open-Ended Questions

Our questioning strategy was to use open-ended questions⁷⁷ that allowed survey participants to describe their training and training needs in their own words. Researchers then classified these responses into useful categories. Using open-ended survey questions allowed us to avoid presenting participants with either impractically long lists of options or a brief set of response categories with which they were unfamiliar. We phrased questions in terms of knowledge, skills, and abilities, and the names of training classes—

⁷⁵ U.S. Merit Systems Protection Board, *Accomplishing Our Mission: Results of the Merit Principles Survey 2005*, Washington, DC, February 2007.

⁷⁶ U.S. Merit Systems Protection Board, *Managing for Employee Engagement: Communication, Connection and Courage*, Washington, DC, July 2009.

⁷⁷ *Open-ended questions* require survey participants to write a response ranging in length from a word or two to several sentences. They contrast with *closed-ended questions*, such as those in multiple-choice or agree/disagree formats, which require survey participants to choose their answer from a list of words, short phrases or numbers.

terms with which our participants were comfortable. This format allowed translation of participants' language into the language of analysis.⁷⁸

Three open-ended questions were developed for this study and administered as part of the MPS 2005 and MPS 2007. They were designed to capture Federal employee perceptions of their personal development needs, the most crucial ability needed to perform their jobs, and their most recent job-related training experience. The first two topics were chosen to provide insight into what training Federal employees are likely to seek. The third was chosen to allow examination of the kinds of training they are successful in obtaining.

The three questions were as follows:

1. "Briefly describe, in one or two sentences, the most important skill or ability you could learn to improve your performance in your current job. Please describe this skill or ability well enough that a training specialist who does not know your job could understand what you need to learn." (MPS 2005)
2. "Please describe in a few words (no more than a sentence) the topic of the most recent formal training closely related to the duties of your current job you received that was paid for or otherwise provided by the Federal Government." (MPS 2007)
3. "Your agency is hiring more staff as a result of increased funding and expansion of its mission. You have been asked to help hire a new employee who will be doing the same type and level of work that you do, but will be part of a different work team. Please describe in a few words or phrases the most important knowledge, skill, or ability this new employee needs to do his or her job well." (MPS 2007)

We classified responses to these questions into six general competency categories⁷⁹, each designated as highly trainable, moderately trainable, or less trainable. These categories were developed using information from the literature review about the different mental abilities people possess, which ones are influenced by genetic factors, and which have been shown to improve as a result of training. Chapter 2 describes the rationale for these categories and their relative trainability.

We also used a number of closed-ended questions from both surveys that asked about training and related topics. A complete list of the questions included on each of these surveys is available in the respective survey reports.

⁷⁸ See, for example, U. Reja, K. L. Manfreda, V. Hlebec, and V. Vehovar, "Open-ended vs. close-ended questions in web questionnaires," in A. Ferligj and A. Mrvar (Eds.), *Developments in Applied Statistics*, FDV, Ljubljana, Slovenia, 2003; or Patrick Kulesa and Ralph J. Bishop, "What did they really mean? New and emerging methods for analyzing themes in open-ended comments" (pp. 238–263), in Allen L. Kraut (Ed.), *Getting Action From Organizational Surveys*, Jossey-Bass, San Francisco, 2006.

⁷⁹ Responses were classified with the aid of the QDA Miner available from www.provalisresearch.com.

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