In the overly constrained space of the federal audit environment, to what extent can critical thinking skills be applied in a profession characterized by arduous public trust expectations, controlling auditing standards, prescriptive federal acquisition policies, frequently changing guidance, continual peer oversight, and the slow implementation of audit findings? Promoting the increased use of private sector auditors may suggest that federal auditors perceive competencies differently. However, a recent survey administered to 645 auditors of a federal audit agency region indicated that the majority of the core competencies identified by the American Institute of Certified Public Accountants are perceived as relevant in auditing government contractors. However, of concern, the data were mixed in support of critical thinking as an important competency. Given employer preference for skills in this area, the author attempts to identify applications to increase auditor critical thinking skills and to offer suggestions for increasing the relevance of the federal audit.

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Keywords: Generally Accepted Government Auditing Standards (GAGAS), Yellow Book, American Institute of Certified Public Accountants (AICPA), Core Competencies, Section 809 Panel
The ability to succeed in an over-constrained space was recently identified as an important leadership attribute by Microsoft Chief Executive Officer Satya Nadella (Jones, 2019). But, in the overly constrained space of the federal audit environment, what does success look like for the federal auditor who aspires to exercise leadership skills? To what extent can critical thinking skills necessary for leadership be applied in a profession characterized by arduous public trust expectations, controlling auditing standards, prescriptive federal acquisition policies, frequently changing guidance, continual peer oversight, and the slow implementation of audit findings?

**Importance of the Federal Auditor in Acquisition**

Federal auditors play a vital role in the acquisition process. In 2018, federal spending was subject to evaluation by about 11,000 auditors primarily employed by the Departments of Defense (DoD) and Health and Human Services (DHHS) (Office of Personnel Management, 2018). The Section 809 Panel, established by Congress in the Fiscal Year 2016 National Defense Authorization Act (National Defense Authorization Act [NDAA], 2016), describes defense auditors as “essential components of the Department of Defense’s system of contracting internal controls” (Section 809 Panel, 2018a, p. 54).

**Impediments to Auditor Critical Thinking**

Several factors can inhibit the federal auditor’s exercise of critical thinking and leadership skills, among them: untimely response to audit findings, auditing standards oversight, changing mission guidance, and threats to job stability.
Untimely Response to Audit Findings

Inaction to audit findings can erode federal auditor morale and compromise auditor commitment to success. Annually, the DHHS publishes the top unimplemented recommendations from its Office of Inspector General audits and evaluations (DHHS, 2018). The Department of Defense Inspector General (DoDIG) distributed a similar 2018 compendium describing about $2 billion of potential monetary benefits from open recommendations (DoDIG, 2018a). Unsustained audit findings on contractor business systems, federal cost accounting standards, and millions of dollars of audit exceptions reported by other DoD agencies were disclosed by the DoDIG for the years 2016 through 2019 (DoDIG, 2016, 2017a, 2018b, 2019).

“

In 2018, federal spending was subject to evaluation by about 11,000 auditors primarily employed by the Departments of Defense (DoD) and Health and Human Services (DHHS).

Auditing Standards Oversight

During this same period, federal auditors were cited for insufficient adherence to auditing standards. In 2017, the DoDIG reported the Army failed its 2017 quality control system review (DoDIG, 2017b); and in that same year, the U.S. Government Accountability Office (GAO) identified untimely audits as a reason for delinquent contract close-outs at the Departments of Defense, State, Transportation, and the National Aeronautics and Space Administration (GAO, 2017b).

Changing Mission Guidance

Rapidly changing mission guidance can trigger auditor fatigue. The customer identity confusion at the Defense Contract Audit Agency (DCAA) is a significant example. The Section 809 Panel (2019, p. 25) reports that about 10 years ago, in response to critical audit independence findings, DCAA identified the “taxpayer” customer in its mission statement. The GAO promptly challenged this action by noting DCAA’s primary role is to advise contracting officers. The Section 809 Panel, in turn, bested GAO’s challenge by recommending DCAA not only advise contracting officers, but provide “education and training”—a recommendation that appears eligible for unintended independence abuse (Section 809 Panel, 2018a, pp. 64–65, 67).
Contradictory guidance not only promotes auditor weariness, but wariness, regarding management trustworthiness. In spite of its best intentions to recognize contracting officer needs, the Section 809 Panel recommendations appear redundant in that DCAA’s current mission statement (available on its external website) already acknowledges both the acquisition team (of which the contracting officer is part) and the taxpayer (DCAA, n.d., *Mission*). Likewise, the DoDIG describes its audit function as including actionable recommendations, that is, actions that improve DoD programs and operations (DoDIG, n.d.). Finally, providing advice to the contracting officer is already compatible with government auditing standards that require the auditor to assist oversight officials by “making recommendations for corrective action” (GAO, 2018c, para. 7.50, p. 139).

**Threats to Job Stability**

Lastly, the federal auditor deals with the continual threat of job encroachment by private sector auditors. Both the National Defense Industrial Association (Thomas, 2017) and the Section 809 Panel recently recommended the hire of “independent professional auditors” (Section 809 Panel, 2019, p. 25). However, the promotion of commercial auditors
as a remedy for federal audit failings appears an easy suggestion that may warrant further deliberation in light of the millions of dollars recently paid for audit failure by the most prestigious accounting firms: a $335 million Price Waterhouse professional negligence settlement in 2019 (Johnson & Schroeder, 2019), a $12 million Ernst & Young failed-audits settlement in 2016 (Securities & Exchange Commission, 2016), and a recent consideration by General Electric to fire KPMG after a 109-year relationship due to significant undisclosed liabilities and other accounting issues (Gryta & Lublin, 2018, pp. B.3, 3). In fact, some government acquisition officials have already expressed concern that public accounting firms may lack “sufficient understanding” of federal contractor business systems (GAO, 2019a, p. 29).

Commercial auditors may not be prepared for the complexity of subject matter with which the federal auditor deals. In March 2019, a GAO review identified more than $3.4 billion in subcontract costs incurred over a 10-year period that had not been audited due, in part, to complex ownership relationships among contractors and subcontractors (GAO, 2019b). Likewise, in November 2018, in connection with its audit of the Internal Revenue Service (IRS) 2017–2018 financial statements, the GAO noted that the complex statistical process the IRS uses to estimate the amounts of taxes receivable contributed to material weakness in internal control over unpaid assessments (GAO, 2018b). Private sector auditors may be less familiar with these complexities than their federal counterparts.

**Auditor Competencies Research**

Promoting the use of nonfederal auditors may suggest that federal auditors perceive the importance of competencies differently than their private sector colleagues. However, recent research conducted by the author finds federal auditors agree with the professional core skills identified by the American Institute of Certified Public Accountants (McClure-Nelson, 2013).

The American Institute of Certified Public Accountants (AICPA) publishes a listing of core competencies needed to enter the accounting profession—a listing that hasn’t significantly changed since the AICPA 2011 “Horizons 2025” report, or AICPA 1999 competency listing (AICPA, 2018a). For the federal auditor, many of whom are certified public accountants (CPAs), the AICPA competencies are largely compatible with the proficiencies identified by the GAO generally accepted government auditing standards (GAGAS) in its Yellow Book. (See Table 1 for a crosswalk of the majority of these competencies.)
### TABLE 1. PARTIAL CROSSWALK OF AICPA COMPETENCIES TO GAO YELLOW BOOK AUDITOR PROFICIENCIES

<table>
<thead>
<tr>
<th>AICPA 2018 Precertification Core Competency Framework</th>
<th>GAO 2018 Yellow Book</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pillar</strong></td>
<td><strong>Competency</strong></td>
</tr>
<tr>
<td><strong>Accounting</strong></td>
<td>Risk assessment, analysis</td>
</tr>
<tr>
<td></td>
<td>3.116 An auditor’s consideration of the risk level of each engagement ...</td>
</tr>
<tr>
<td></td>
<td>System and process management</td>
</tr>
<tr>
<td></td>
<td>1.19 The subject matter of an attestation engagement may take many forms, including the following: e. systems and processes ...</td>
</tr>
<tr>
<td></td>
<td>Reporting</td>
</tr>
<tr>
<td></td>
<td>1.06 GAGAS contains requirements and guidance dealing with ... reporting.</td>
</tr>
<tr>
<td></td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>5.30 Consultation uses appropriate research resources ...</td>
</tr>
<tr>
<td></td>
<td>Technology and tools</td>
</tr>
<tr>
<td></td>
<td>4.24 Subject matter that directly enhances auditors’ professional expertise to conduct engagements may include ... h. information technology</td>
</tr>
<tr>
<td></td>
<td>Strategic perspective</td>
</tr>
<tr>
<td></td>
<td>1.04 Those charged with governance refers to the individuals responsible for overseeing the strategic direction of the entity ...</td>
</tr>
<tr>
<td></td>
<td>Global and industry perspectives</td>
</tr>
<tr>
<td></td>
<td>5.26 The audit organization’s policies and procedures may address consistency in the quality of engagement performance. This is often accomplished through ... industry-specific or subject matter-specific guidance materials.</td>
</tr>
<tr>
<td></td>
<td>Resource management</td>
</tr>
<tr>
<td></td>
<td>1.24 Examples of internal control audit objectives include determining whether b. resources are used in compliance with laws, regulations ...</td>
</tr>
<tr>
<td></td>
<td>Governance perspective - Legal and regulatory</td>
</tr>
<tr>
<td></td>
<td>5.26 ... Matters addressed may include the following: j. ... applicable legal and regulatory requirements.</td>
</tr>
</tbody>
</table>
Auditors often conduct GAGAS engagements under a contract with a party other than the officials of the audited entity or pursuant to a third party request.

Subject matter that directly enhances auditors’ professional expertise to conduct engagements may include...

b. *general ethics* and independence...

Examples of prospective analysis objectives include providing conclusions ... b. program or policy *alternatives* ...

Since the opinions of federal auditors have been inadequately solicited regarding competencies required for success, a recent study was undertaken by the author to assess the relative importance of the AICPA core competency framework to the federal auditor of government contractors (McClure-Nelson, 2013). The study was based on the 1999 AICPA competency framework that categorized skills as either functional, broad business, or personal (presently referred to by the AICPA as accounting, business, and professional categories). A survey was administered to 645 auditors of a federal audit agency region requesting opinions of the importance of AICPA-defined competencies.
Research Questions

The main research question of the study was whether the categorized AICPA core competencies adequately describe the skills and attributes required in a federal auditing environment. (See Table 2 for a complete listing of the skills included in these categories.) Questions and hypotheses included:

- **Research Question 1:** To what extent are the AICPA core competencies relevant in auditing federal contractors? Auditors were expected to find that the majority of AICPA core competencies were relevant and that risk analysis would be identified as an important competency.

- **Research Question 2:** To what extent are some AICPA core competencies more important than others to auditors of federal contractors? Auditors were expected to rank the functional accounting skills as well as the personal skills as more important than the business skills. Of the business skills, auditors were expected to identify strategic critical thinking as the most important of these competencies.

- **Research Question 3:** To what extent are opinions different regarding the relevance and ranking of the AICPA core competencies given increased job experience of the auditor of federal contractors? The more experienced federal auditors were expected to demonstrate greater appreciation for the business competencies than their junior counterparts.

- **Research Question 4:** To what extent are other competencies, not identified by the AICPA, important to the work of auditors of federal contractors? Senior auditors were expected to identify maintaining independence as an additional required competency.
Protocols to Protect Human Subjects

Protection of Human Subjects (2019) protocols were based on the requirements set forth in 21 C.F.R. Pts. 50, 56 and 45 C.F.R. Pt. 46. The research was reviewed and approved by the Wilmington University Human Subject Review Committee. Procedures for obtaining informed consent included notifying participants that participation would contribute to academic research regarding the best preparation for a career in federal auditing, communicating that the study did not involve payments or incentives, and finally, that participation was voluntary and anonymous.

Limitations of the Research

The study is limited in that not all federal auditors audit federal contractors, nor do all federal auditors follow the same auditing procedures for all types of audits. For instance, some federal auditors audit other government components. The research, however, may prove applicable to nongovernment auditors who audit federal contractors.

Research Methodology

The population was a geographic region of a sizeable federal audit agency that audits the cost representations of government contractors. The single geographic region was representative of other agency regions in that all auditors receive the same training at a common educational site, follow the same audit policy prescribed by agency headquarters, adhere to the same agency-prescribed audit standards, and use the same agency audit programs. In addition, auditors transfer among the agency regions.

Two groups were included in the population; the first consisted of junior auditors at General Service (GS) grade levels GS-7, 9, and 11; and the second consisted of senior-level auditors, at GS-12 and 13 grades. At the time of the
study, the group of senior-level auditors totaled about 380 and the group of junior auditors totaled about 265 (for a total of 645) in the single region. A total of 263 usable responses was received (109 junior auditors and 154 senior auditors)—a 41% response rate (263/645). Managers above the GS-13 level were excluded from the population given their small number relative to the other GS levels.

**Research Instrument**

Likert Scale survey questions were developed from the AICPA core competencies described on the AICPA Educational Competency Assessment website. The AICPA grouped core competencies into three broad categories as shown in Table 2. Likert questions were coded to the AICPA core competencies in order to draw meaningful conclusions from analysis of the data. Since the survey was newly developed for purposes of this study, three federal CPA auditors were requested to match the Likert questions to the AICPA categories and competencies identified by the researcher. Fleiss’ Kappa coefficients were then computed to measure inter-rater agreement. Acceptable Cronbach alpha statistics were obtained that measured internal consistency and reliability of the questions developed for each competency and for competencies within the three categories. Survey Monkey was used to administer the survey November 1–16, 2012. Survey questions are shown in Table 3.
**TABLE 3. RESEARCH SURVEY QUESTIONS**

*Question: How important is it for the federal auditor in your Agency to...?*

<table>
<thead>
<tr>
<th>No.</th>
<th>AICPA Core Competencies</th>
<th>Not Important</th>
<th>Little Importance</th>
<th>Somewhat Important</th>
<th>Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Analyze changes in the financial risks of the contractor’s industry/sector</td>
<td></td>
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<tr>
<td>2</td>
<td>Understand why controls cannot completely eliminate the risk of fraud</td>
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<td>3</td>
<td>Demonstrate objectivity and integrity consistent with the standards of auditing</td>
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<tr>
<td>4</td>
<td>Establish working relationships with audit requestors</td>
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<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Interact and cooperate productively and maturely with others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Use technology-assisted tools to assess and control risk and document work</td>
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<tr>
<td>7</td>
<td>Communicate information and concepts with conciseness and clarity when writing and speaking</td>
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<tr>
<td>8</td>
<td>Interpret research findings from a variety of viewpoints</td>
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<tr>
<td>9</td>
<td>Communicate the contractor’s planning process, strategy, and goals</td>
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<tr>
<td>10</td>
<td>Identify pros and cons of alternative methods of measurement</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>11</td>
<td>Consider how human resource management affects a contractor</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>12</td>
<td>Develop innovative or creative solutions to problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>13</td>
<td>Report findings in accordance with auditing standards</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>14</td>
<td>Inspire and motivate team members</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Analyze the impact of changes in contracting laws and regulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Use mathematical or scientific models to evaluate decision alternatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Prioritize and delegate various aspects of a project in order to allocate resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Identify global threats and opportunities impacting contractors</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
Data Collection Procedures

Data collected from respondents were coded and entered into a computer data file for analysis using Minitab, IBM SPSS (ver. 20.0) statistical software and Microsoft Excel. Demographic data related to the number and nature of the two groups of junior and senior auditors were determined using frequencies and percentages in order to develop a profile of the respondents. Descriptive statistics were computed regarding frequencies and percentages of responses. Multiple regression determined whether competency rating was a function of GS level or a function of GS levels plus gender or age.

In order to determine whether differences existed between the two groups of junior and senior auditors, an independent t-test was computed to compare the means between the two groups for each of the competencies. Multiple regression determined which independent variables (demographic factors) were statistically significant in influencing the outcome of the dependent variable (responses to Likert questions).

Results of the Study

• **Question 1.** The data supported that federal auditors found the majority of the AICPA core competencies relevant in auditing government contractors and that the competency of risk analysis is important. (See Table 4 for the listing of competencies ranked by importance.)

• **Question 2.** The data supported that auditors found the functional accounting skills as well as the personal skills, more important than the business competencies. However, the data only partially supported the hypothesis that auditors would identify strategic critical thinking as the most important business competency.

• **Question 3.** Increasing age correlated with more importance assigned to three of the six business competencies (industry/sector, strategic critical thinking and international/global), providing limited support to the hypothesis that senior auditors would appreciate business competencies more than the junior auditors.

• **Question 4.** Finally, the data did not support the hypothesis that senior auditors would identify maintaining independence as an additional required competency.
TABLE 4. RESULTS - COMPETENCIES RANKED BY IMPORTANCE

<table>
<thead>
<tr>
<th>NO.</th>
<th>SURVEY RESULTS Competencies Ranked By Importance</th>
<th>NO.</th>
<th>SURVEY RESULTS Competencies Ranked By Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reporting</td>
<td>10</td>
<td>Leadership</td>
</tr>
<tr>
<td>2</td>
<td>Communication</td>
<td>11</td>
<td>Research</td>
</tr>
<tr>
<td>3</td>
<td>Professional Demeanor</td>
<td>12</td>
<td>Problem Solving</td>
</tr>
<tr>
<td>4</td>
<td>Interaction</td>
<td>13</td>
<td>Decision Modeling</td>
</tr>
<tr>
<td>5</td>
<td>Marketing</td>
<td>14</td>
<td>Strategic Critical Thinking</td>
</tr>
<tr>
<td>6</td>
<td>Leverage Technology</td>
<td>15</td>
<td>Measurement</td>
</tr>
<tr>
<td>7</td>
<td>Risk Analysis</td>
<td>16</td>
<td>Industry Sector</td>
</tr>
<tr>
<td>8</td>
<td>Legal Regulatory</td>
<td>17</td>
<td>Resource Management</td>
</tr>
<tr>
<td>9</td>
<td>Project Management</td>
<td>18</td>
<td>International Global</td>
</tr>
</tbody>
</table>

Demographic Findings

The results of multiple regression indicated gender correlated with the response to many of the Likert questions. Therefore, in order to determine if women tended to give a higher rating in general, t-tests were conducted between men and women for their responses to all competency questions and for their responses to categories of competencies questions. The results indicated that women tended, in general, to rate higher than men.

However, in order to determine whether differences existed in the importance assigned to the categories of competencies between men and women, t-tests were conducted between two different categories of competencies, at a time, for women and for men. The results indicated that even though women tend to give a higher rating, no difference existed in how they would assign importance to the three categories of competencies when compared with men.

The Importance of Critical Thinking

Of concern, the data were mixed in support of critical thinking as an important competency. Instead of identifying strategic critical thinking as the most important business competency, auditors ranked it third, behind the marketing and legal/regulatory competencies. Respondents also gave relatively low rankings to competencies similar to strategic
critical thinking, such as decision modeling and problem solving. However, when asked to rank the three most important competencies, they identified strategic critical thinking as the third out of 18 competencies.

The mixed response is of concern given the importance of strategic critical thinking to the work of the federal auditor. Numerous researchers have found strategic critical thinking to be important for the profession of accounting/auditing (Bolt-Lee & Foster, 2003; Daigle, Hayes, & Hughes, 2007; Gupta & Marshall, 2010; Jim, Damtew, Banatte, & Mapp, 2009; Kaciuba & Siegel, 2009; Thomas, 2000). Auditors require the critical thinking skills that allow for analyzing business risk (McKnight & Wright, 2011).

The federal auditor’s intent on meeting the rigidity of auditing standards or preoccupation with the knowledge content required for passing the CPA exam may account for the low standing of critical thinking as a required competency. University accounting programs continue to stress content memorization required for passing the CPA exam instead of emphasizing the critical thinking skills required of auditors by employers (Gupta & Marshall, 2010).

The implications of this finding are significant with regard to what an already overburdened accounting curriculum can be expected to deliver. The accounting course of study is currently expected to provide training in the emerging areas of forensic accounting, the international financial reporting standards, and enhanced internal controls resulting from Sarbanes-Oxley legislation, but still deliver the knowledge content demanded by the CPA exam. The inclusion of other important competencies such as ethics, identification of fraud, information literacy, communication capabilities, and strategic critical thinking challenges accounting faculty to find the time to introduce these topics without displacing other key topics in accounting courses (Young & Warren, 2011).

Faculty are additionally subject to what Vance and Stephens (2010, p. 6) refer to as the increasing pressures within colleges to “acquiesce to the needs” of the current generation whose sufficiency in a well-developed work ethic is questioned by the authors. In fact, these authors specifically note the absence of competencies such as behavioral drive and self-motivation.

While the responsibility of educating accounting students includes preparation for professional work and professional identity (Wilkerson, 2010), the research indicates graduate education or employer training programs may be better able to address the development of strategic critical thinking skills.
Other Findings

Other noteworthy findings resulted from the author’s research. Auditors identified communication and measurement as skills needing improvement. Concerning communication, one auditor noted, “effective writing skills are essential, we must document everything we do. Our audit reports are our product and the communication given must be clear and able to stand the test of time.” With respect to measurement, the importance assigned to this competency may have flowed from the well-recognized auditing term “criteria” in the AICPA definition; i.e., auditors are trained to evaluate contractor performance against criteria—most often, the Federal Acquisition Regulation (FAR).

The study also indicated that, contrary to prevailing literature, auditors of federal contractors want better training in conventional accounting content such as general ledger accounting and, especially, cost accounting. For instance, one respondent noted “the ability to understand how the contractor’s accounting systems work is very important. Having previous experience as an accountant (general ledger, accounts payable, payroll) has been extremely helpful in understanding how different systems work.”

The accounting course of study is currently expected to provide training in the emerging areas of forensic accounting, the international financial reporting standards, and enhanced internal controls resulting from Sarbanes-Oxley legislation, but still deliver the knowledge content demanded by the CPA exam.

Knowledge of cost accounting is important in auditing cost representations of federal contractors, especially with regard to rates computed to recover indirect cost. A respondent noted, “I remember taking cost (or managerial) accounting; but not to the extent that is needed” for federal auditing. Other respondents identified a need for “knowledge of pools and bases and the application of indirect cost to direct cost” and a need for training in “the development of a predetermined and actual indirect rate, including the allocation process for those rates.”

Many of the comments referred to the need for specialized undergraduate training in the FAR criteria. For instance, one auditor noted, “they don’t stress the auditing environment in the undergraduate curriculum. I had 1
class my senior semester and nothing prepared myself for federal contract auditing.” Other comments included “additional concentration needs to be made on Government Procurement and Contracting” … “understanding various contract types, Federal regulations … contract knowledge. The documents and agreements for which the costs were incurred are largely unknown to auditors” and “understanding the acquisition and procurement process.” Finally, one auditor noted “…Specifically FAR, I did not even know this existed when I started.”

**Profession’s Acknowledgment of the Importance of Critical Thinking**

As the federal auditor continues to strive for success in an overly constrained space, both governmental and nongovernmental constituents are acknowledging the value of improving auditor critical thinking skills.

**Governmental Acknowledgment**

In an August 2017 report to Congress, the DoD called for a new emphasis in acquisition workforce critical thinking that would require “a cultural change and the re-education of its workforce” (Section 809 Panel, 2018b, p. 62). In its 2016–2020 Strategic Plan, DCAA identified the development and application of critical thinking to best formulate defensible audit positions (DCAA, n.d., Strategic Plan). The GAO Yellow Book describes the need to evaluate “program or policy alternatives” in forming conclusions for performance audits (GAO, 2018c, para. 1.26., p. 14). The training institute of the federal Council of the Inspectors General on Integrity and Efficiency identifies critical thinking skills as a core competency (Council of the Inspectors General, n.d.).
Nongovernmental Acknowledgment

Nongovernmental entities also acknowledge the value of critical thinking skills development. For instance, accounting professional societies are promoting the development of critical thinking skills, the integration of liberal arts into the accounting curriculum, and emphasizing nonquantitative topics such as ethics and communication for accounting students (McClure-Nelson, 2013). Likewise, and as previously noted, the AICPA includes strategic perspective and decision-making skills in its current competency framework. The AICPA Statement on Standards for Attestation Engagements (SSAE) No. 18 describes professional skepticism as a requirement for a critical assessment of evidence (AICPA, 2018c). The Institute of Internal Auditors emphasizes the usefulness of logic in its critical thinking eWorkshop training (Institute of Internal Auditors, n.d.). KPMG advertises its master’s program in Data Analytics for the necessary improvement of critical thinking skills (KPMG, n.d.).

Practical Means to Improve Auditor Critical Thinking

Critical thinking means investigating inconsistencies, questioning assumptions, and evaluating data from sources that may not be directly related to the subject at hand. The good news is that auditors are already trained in the concept of professional skepticism. However, in many cases during an audit, the exercise of professional skepticism only results in additional requests for data that validate the audit matter rather than contradict (Griffith, Hammersley, Kadous, & Young, 2015). Current research offers some practical means to develop auditor critical thinking skills that include deliberative mindset interventions, case studies review, emotional intelligence activities, and the practice of metacognitive skills.

For instance, studies show that by engaging, before the audit, in specific practices that challenge the conventional approach to conducting standard audit steps, auditors can improve critical thinking skills, and, it is hoped, audit quality. Practices can include periodic exercises unrelated to the specific audit matter in order to best prepare deliberative acuity (Griffith et al., 2015). Other means are to review case studies (Gribbin & Saini, 2016) or engage in emotional intelligence activities (Yang, Brink, & Wier, 2018).

Researchers also recommend developing metacognitive skills, that is, divergent thinking that develops multiple explanations without a concern for feasibility, followed by convergent thinking that assesses the logical
validity of each explanation. The subsequent conscious elimination of explanations may help the auditor understand the relationship among various facts (Plumlee, Rixom, & Rosman, 2015). By participating in these tasks unrelated to the specific audit, auditors have been shown to better prepare and trigger a critical thinking mindset.

Federal oversight has also identified some practical remedies. In 2018, the GAO recommended that DoD develop strategy for how information related to commerciality and price reasonableness determinations could be shared across the department to improve procurement of commercial items (GAO, 2018a). The NDAA directed practical critical thinking when, in 2013, it provided for the access and review of auditee internal audit reports by federal auditors (GAO, 2014). The GAO recently recommended to the AICPA that coverage of GAGAS be expanded on the CPA exam in order to improve the quality of governmental audits (Dalkin, 2015). In 2016, the GAO recommended the practice of data analytics to the Department of Energy (GAO, 2017a).

**Other Suggestions for Improvements**

Federal auditors can ensure inclusion of specific recommendations for corrective action in the audit report, minimize the audit jargon that frustrates report recipients, and develop qualitative metrics that measure customer satisfaction.

To curb the tendency to gravitate to unnecessarily conservative report opinions out of an abundance of caution, the GAO Yellow Book emphasis on the term *effect* should be referenced when selecting an audit opinion. Specifically, at SSAE No. 18 AT-C 205.A106, the auditor is advised to exercise professional judgment about the pervasiveness of the *effects* on the subject matter resulting from an inability to obtain sufficient appropriate evidence or from auditee misstatements (AICPA, 2017). A practical example may be deliberation about the effect of an untimely receipt of a corporate allocations’ supporting audit when the supporting audit is known to be progressing and, historically, does not result in significant audit findings.

Auditors conducting GAGAS attestation engagement audits also need to be aware that changing audit standards can impact the nature and extent of auditing procedures. In 2011, the GAO made a significant change to the Yellow Book by introducing the term “by reference” at section 2.20a when incorporating the AICPA standards (GAO, 2011, para. 2.20a, p. 23). The term “by reference” had not been used in the predecessor 2007 Yellow Book.
The change was significant in that, unless referenced, some prescriptive financial statement audit standards were not applicable to attestation engagements. In other words, auditors need to be mindful of the diminishing utility of nonapplicable audit procedures when the engaging party is waiting for audit results.

Federal auditors might also consider implementing the Section 809 recommendation to use the “full range of audit and non-audit services available” (Section 809 Panel, 2018c, p. 52). For example, the AICPA is currently considering a revision to the standards for agreed-upon procedures that would not require the auditor to request a written assertion from the contractor when the auditor is reporting directly on the subject matter (AICPA, 2018b, p. 2). These very current AICPA deliberations may provide some needed flexibility for the contracting officer who requires limited auditing services in a shortened time frame.

It’s hoped these suggestions can loosen the constraints on success for the federal auditor who aspires to apply greater critical thinking skills in the exercise of the audit.
References


Section 809 Panel. (2019). Report of the advisory panel on streamlining and codifying acquisition regulations, A roadmap to the section 809 panel reports (Vol. 1, Sec. 2). Retrieved from https://section809panel.org/roadmap/


Author Biography

Dr. Gabrielle G. McClure-Nelson

is an Assistant Professor at Embry-Riddle Aeronautical University, Daytona Beach, Florida. Dr. Nelson retired after 29 years as a federal auditor, including a 25-year tenure with the Defense Contract Audit Agency (DCAA), Department of Defense, where she served as auditor, technical specialist, audit supervisor, branch manager, headquarters program manager, and regional audit manager. Dr. Nelson is a Certified Public Accountant and previously guest-instructed the Defense Acquisition University Cost Accounting Standards course. Dr. Nelson holds a DBA from Wilmington University, an MBA from the University of Delaware, and a BBA from Temple University.

(E-mail address: mcclurg1@erau.edu)