Assessing Training Needs: Do Work Experience and Capability Matter?

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Despite the crucial nature of needs assessment in training design and development, very little empirical work examining factors that influence such ratings has been undertaken. We investigated the impact of individuals’ levels of work experience, self-efficacy, and skill proficiency on their subsequent ratings of training needs. Our results indicate that self-efficacy and skill proficiency are positively related to importance and frequency ratings for both skills and job tasks. However, when considered collectively, skill proficiency was a more potent influence, suggesting that an individual’s actual capability may have a greater impact on ratings of training needs than his or her perceived capability (i.e., self-efficacy). Implications for future research and training needs assessment practice are discussed.

Training needs assessment (TNA) is a primary phase in the design and development of training programs. Such assessment captures information spanning where and why training is needed (organization focus), who needs to be trained (person focus), and what must be incorporated as program content (task focus; I. L. Goldstein, 1993). Conducting systematic needs assessment can significantly impact the overall effectiveness and quality of training programs (I. L. Goldstein & Ford, 2002; Kraiger & Aguinis, 2001; McGehee & Thayer, 1961). Furthermore, the information generated during TNA allows for data-driven decisions surrounding the design, development, and delivery of training content, as well as
criterion development for evaluation purposes (Arthur, Bennett, Edens, & Bell, 2003).

Although the utility and criticality of TNA is widely acknowledged, empirical work on the subject has been quite meager (Tannenbaum & Yukl, 1992). For example, Arthur and colleagues (2003) recently remarked that studies conducting needs assessments represented only 6% of the data within their meta-analysis of training effectiveness. Salas and Cannon-Bowers (2001) further emphasized this dearth of research in their recent review of the field of training: “It is interesting to note that whereas most training researchers believe and espouse that training needs analysis is the most important phase in training, this phase remains largely an art rather than a science” (p. 477). Considering the substantial role TNA plays in the overall success of training and the sheer amount of financial resources dedicated to training and development efforts in modern organizations (billions of dollars annually; Noe, 2005), this lack of systematic research is potentially problematic to both training practitioners and researchers.

Within TNA, task-focused analyses play a central role because they provide information directly used to determine the precise content of subsequent programs. This information can range from the tasks and duties that must be performed within a given work role to the various knowledge, skills, and abilities necessary for performance (I. L. Goldstein, 1993). Sources for this facet of needs assessment are typically supervisors or incumbents (Noe, 2005). Unfortunately, whether such sources provide unbiased information about work role requirements relevant to training needs remains a largely untested assumption (Kraiger & Aguinis, 2001).

An inventory approach is often used to capture task-focused TNA data (Ford, Smith, Sego, & Quiñones, 1993). This method of data collection is based on rather conventional job analysis techniques (Dierdorff & Wilson, 2003). However, it is important to note that job analysis can be undertaken for a wide variety of personnel purposes, of which training is but one (Sackett & Laczo, 2003). When prior job analysis results are available, task-focused TNA efforts are frequently undertaken to augment these previous results by focusing on only select areas to be trained (e.g., particular subset of job duties) rather than the requirements of the entire work role. Thus, task-focused TNA will typically employ similar methodologies used in job analysis, but the scope of data collection is much more acute in purpose. This is especially the case when a thorough organization-focused TNA delineating the alignment of training needs with organizational goals has been conducted. Nonetheless, job analysis research can inform predictions in TNA research as it seeks to explain factors that more generally influence how individuals perceive and assess their various work role requirements.

Job analysis research indicates that several individual-level variables may impact work role requirement ratings. These factors include experience or tenure (e.g., Dierdorff, Wilson, & Carter, 2003; Landy & Vasey, 1991; Richman & Quiñones, 1996; Tross & Maurer, 2000), as well as performance and ability (e.g.,
Aamodt, Kimbrough, Keller, & Crawford, 1982; Harvey, Friedman, Hakel, & Cornelius, 1988; Henry & Morris 2000). To date, however, very few studies have systematically examined requirement ratings within a needs assessment paradigm. One exception has been Ford et al. (1993), who investigated the extent to which task experience, self-efficacy, and general cognitive ability affected ratings of training emphasis for several job tasks. They found that increased experience and self-efficacy led to higher training emphasis ratings. Similar to most prior job analysis research, the focus of the Ford et al. (1993) study was restricted to ratings of job tasks. Other types of work descriptors are certainly salient to training (e.g., skills), and their use can have different rating implications (Dierdorff & Rubin, 2006; Morgeson & Campion, 2000). For example, asking individuals to evaluate attribute requirements (skills) in comparison to activity requirements (tasks) is likely to promote ratings that are more self-referent than job-referent (Morgeson, Delaney-Klinger, Mayfield, Ferrara, & Campion, 2004). Moreover, the impact of self-referencing is likely to be amplified in certain rating contexts such as when assessing training needs (Morgeson & Campion, 1997; Morgeson et al., 2004). At the very least, this evidence illustrates the increased potential for individual differences to affect work role requirement ratings on particular types of descriptors, in particular types of settings such as during needs assessment for training purposes.

STUDY PURPOSE AND SCOPE

Research has indicated that work role requirement ratings may vary due to individual differences and to methods of operationalization, such as chosen work descriptor and rating scale (Conte, Dean, Ringenbach, Moran, & Landy, 2005; Dierdorff & Wilson, 2003). Work descriptors typically captured during TNA efforts include specific knowledges, tasks, and skills (Ford & Kraiger, 1995; Holton & Bailey, 1995). Rating scales that are often used for TNA include importance, frequency, and difficulty (I. L. Goldstein, 1993). In our study, we specifically delineated our empirical examinations across tasks and skills using rating scales of importance and frequency of performance. Training scholars have explicitly indicated that both task and skill assessments are especially central to measuring training needs (Wexley & Latham, 2002). Although not necessarily unique to TNA, scales of importance and frequency are fundamental in determining the content of training programs (Noe, 2005) and are significant components of the “opportunity to perform” construct important to learning transfer (Ford, Quiñones, Sego, & Sorra, 1992). As for individual-level factors, we tested measures of raters’ work experience, self-efficacy, and skill proficiency for their relationships to subsequent TNA ratings. The following paragraphs discuss each of these factors and hypothesize their relationships to TNA ratings.
Work Experience

In a general sense, work experience is the degree of exposure that individuals accumulate in relation to performing the requirements of their work roles. Conceptually, measures of work experience may vary by level of specificity and mode of measurement (Schmitt, Cortina, Ingerick, & Weichmann, 2003). The specificity of work experience can be captured at the task, job, and organization levels using operationalizations of amount (e.g., number of times a task was performed), time (e.g., job tenure), and type or quality of experience (Quiñones, Ford, & Teachout, 1995). Richman and Quiñones (1996) further emphasized the importance of how work experience is assessed and noted that simple measures of job tenure, although prevalently used, provide only a narrow definition of work experience. In our study, work experience was assessed using two modes of measurement at the job level of specificity: amount of actual work role experience and the length of time spent in the work role. It is important to note that both the amount of actual work experience and tenure accrued in one’s work role are associated with work role performance (Quiñones et al., 1995).

Research indicates that work experience can be related to task ratings (Borman, Dorsey, & Ackerman, 1992) and skill ratings (Goldstein, Noonan, & Schneider, 1992; Tross & Maurer, 2000). Social perception theory offers possible explanation for these findings. This model purports that individuals develop schemas out of direct experience (Scrull & Wyer, 1988) and these schemas play an influential role in the understanding and evaluation of a person’s surroundings, such as the various demands of one’s work role. These findings also have an intuitive appeal in that individuals with greater job experience should have more opportunities to engage in the requisite activities inclusive of that work role and thus, should be better able to rate these activities. Expertise often follows from increased work experience, and this expertise could impact subsequent TNA ratings. A substantial body of literature suggests that experience and expertise are closely linked (Chi, Feltovich, & Glaser, 1981; Chi, Glaser, & Rees, 1982; VanLehn, 1996), and others have argued that this may impact judgments of training needs (e.g., Ford & Kraiger, 1995).

Taken collectively, the increase of exposure to the breadth of work role requirements, the greater capacity to judge such requirements, and the potential gain of work role expertise are all probable consequences of accrued work experience. These effects are quite likely to combine to influence subsequent TNA ratings. However, previous research investigating the association between experience and role requirement ratings has also produced somewhat equivocal findings (Dierdorff, Wilson, & Carter, 2004; Tross & Maurer, 2000). It may very well be that more experienced individuals, who naturally have more opportunities to perform various activities and more job-related knowledge (Ford et al., 1992; McDaniel, Schmidt, & Hunter, 1988), will perceive such activities as more important to their work roles. On the other hand, more frequent performance of these re-
requirements may serve to attenuate perceived importance as more experienced individuals are likely to spend less time on such activities (Borman et al., 1992). Considering both theoretical postulations and prior empirical findings, we hypothesized that work experience would be related to TNA ratings but chose not to posit a directional hypothesis.

H1: Work experience is related to TNA ratings.

**Self-Efficacy**

Self-efficacy is typically defined as the belief in one’s capability to successfully perform a given task (Bandura, 1977, 1997). Self-efficacy has been shown to be associated with a wide variety of training-related variables such as effort and persistence (Quiñones, 1995), training performance (Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991), and reactions to training (Gist, Schwoerer, & Rosen, 1989). Self-efficacy is also strongly related to job performance (Stajkovic & Luthans, 1998). In relation to ratings, some research indicates that an individual’s effectiveness in specific facets of job performance is related to importance ratings of those job dimensions (Henry & Morris, 2000) and that self-efficacy is positively associated with training emphasis ratings of job task requirements (Ford et al., 1993).

Self-efficacy has been shown to impact perceptions of environmental demands (Wood & Bandura, 1989) and self-distortions of personal knowledge (Bandura, 1997). Perceptions of environmental demands are relevant to ascertaining the demands of one’s work role, whereas personal knowledge is salient to knowing how one actually meets those demands (i.e., performs the work role). Both of these factors are important to the rating process used when rendering judgments regarding training needs. With increased self-efficacy comes more confidence in one’s capacity to perform activities requisite to the work role. Evidence also indicates that self-efficacy is a positive function of past performance (Vancouver, Thompson, Tischner, & Putka, 2002; Vancouver, Thompson, & Williams, 2001). Individuals that are more efficacious should be more likely to perform the entirety of work role activities because self-efficacy is known to affect task choice, effort, and persistence, as well as greater effort to overcome challenges (Bandura, 1991; Gist & Mitchell, 1992). Low-efficacious individuals are less likely to engage in the full range of work role responsibilities, thus minimizing the perceived importance of these requirements. Therefore, more efficacious individuals would likely provide higher TNA ratings than less efficacious individuals. Because self-efficacy affects the prevalence of task performance, it is also likely that self-efficacy will have differential influence on frequency ratings as compared to importance ratings.

H2: Self-efficacy is positively related to TNA ratings.
Skill Proficiency

Skill refers to an individual’s procedural capacity to acquire and work with relevant information (Mumford, Peterson, & Childs, 1999). Skill proficiency refers to the demonstration of this procedural capacity compared against some specified or desired level. Almost axiomatic, previous research has demonstrated the link between skill proficiency and job performance (e.g., Mahoney & Deckop, 1986; Robinson & Robinson, 1989). In relation to work-related ratings, various abilities and skills of individuals have been shown to impact rating quality (Borman & Hallam, 1991; Cardy & Kehoe, 1984; Sagie & Magenzy, 1997). Research also suggests that an individual’s actual proficiency is associated with performance-related skill ratings (Hausman & Strupp, 1955) and that perceptions of skill proficiency impact job performance ratings (Tesch, Jiang, & Klein, 2003).

Similar to efficacious individuals, those with high skill proficiency will be more likely to fully engage in requisite work role activities. To the extent that their jobs require certain skills for effective performance, individuals with higher skill proficiency will tend to be better performers. Considering these combined effects, skill proficiency should influence subsequent TNA ratings. This relationship is also likely to vary depending on whether the work descriptor is task or skill related. When the descriptor is a skill item, the influence of skill proficiency should be especially potent because of the nomonological similarities between the descriptor and the work role requirement (i.e., judgments of skill and actual skill proficiency). In addition, greater proficiency should increase the prevalence of performing the full breadth of work role requirements, as skilled individuals are likely to perform specific role requirements more often than those lacking such skills. Thus, skill proficiency is likely to have varying influence across rating scales and descriptors.

H3: Skill proficiency is positively related to TNA ratings.

Actual Capability Versus Perceived Capability

It is important to recognize that both self-efficacy and skill proficiency deal with an individual’s capability to meet the requirements of a work role. However, a salient distinction can be made between these two factors in relation to the objectivity of the capability assessment. Self-efficacy represents one’s perceived capability to perform a particular activity (Mitchell, Hopper, Daniels, George-Flavy, & James, 1994) and thus, is a subjective assessment. On the other hand, when measured with an objective instrument, skill proficiency represents an individual’s actual capability.

Both perceived capability and actual capability are important predictors of performance and can vary widely across individuals, even for the same tasks (Gist & Mitchell, 1992; Yeo & Neal, 2006). In addition, both forms of capability are targets
and outcomes of training initiatives and thereby highly relevant to needs assessment. As discussed in the preceding paragraphs, both skill proficiency and self-efficacy should be expected to influence subsequent TNA ratings. An additional salient question is then raised regarding which form of capability (perceived or actual) is most influential with regard to TNA ratings. Previous discussions of self-efficacy outlined several reasons to expect individuals with higher levels of self-efficacy to provide higher TNA ratings. At the same time, there is also mounting evidence suggesting that judgments of self-efficacy can often be “inaccurate” or overly optimistic (Vancouver et al., 2002; Vancouver et al., 2001). Therefore, examining the relative effects of objective and subjective capability represents a significant and unique empirical contribution. Moreover, such analysis allows for more comprehensive and comparative examinations of how these person characteristics impact ratings of training needs.

METHOD

Participants and Procedure

Participants were members of the U.S. Special Operations Forces (SOF). Specifically, our sample consisted of U.S. Army Special Forces, Civil Affairs, and Psychological Operations Soldiers, and U.S. Air Force Special Operations personnel. Special Operations is a large military organization whose personnel routinely conduct a variety of specialized training and operational missions around the globe as part of regionally focused units. Participants who were included in our study met several criteria. Aside from being a member of one these specialized units, each had been deployed on a mission in the past 4 years and occupied a work role with foreign language requirements. A total of 202 individuals comprised this sample. The majority of the sample was male.

A Web-based inventory (Special Operations Forces Language Needs Assessment Survey) was created to capture TNA ratings for skill and task descriptors directly relevant to work-related foreign language requirements. Information gleaned from the TNA survey was intended to identify needs that would be used in subsequent policy decisions and program design of foreign language training initiatives. Important to note is that foreign language capabilities are a significant component of the organization’s training strategy (U.S. Department of Defense, 2006). Foreign language acquisition is an essential element of training for SOF personnel, as most units are required to have multiple language capabilities and many SOF personnel have at least one required language to learn and maintain. Given the increased demands of operations in Iraq and Afghanistan, the importance of having language-enabled SOF personnel with sufficient language skills to accomplish missions both inside and outside their areas of responsibility (AOR;
their unit’s focal region of the world) has never been more critical. The amount of language preparation varies based on work role, unit, and AOR. Although many SOF personnel receive language training in their focal, required language, they receive less training when working outside their primary AOR. Recent operations have required many SOF personnel to work outside their AOR. Because many of these SOF personnel receive only about 40 to 200 hours of predeployment training in Arabic or Persian, it is critical that the most important and frequent language tasks and skills be identified and incorporated into training efforts.

The development of the TNA survey was predicated on an expansive prior job analysis of the participants’ work roles. This previous job analysis was primarily interview based and involved more than 20 separate focus groups consisting of subject matter experts (e.g., training specialists, incumbents, etc.). The results of this job analysis were specifically used to identify the subset of tasks and skills that required foreign language capabilities. These task and skill descriptors were included in the TNA survey and are discussed next.

Measures

Tasks. Eight general task statements, each involving the use of foreign language for performance, were rated on scales of importance and frequency. Importance scales consisted of 5 points ranging from not important to critical. Frequency scales captured how often a given task was performed and consisted of 5 points ranging from never to very often. The tasks were general in nature and thus were more akin to generalized work activities than to traditional molecular statements typically found in task inventories. Each item began with a general activity and included a specific behavioral example. Examples include “Think about the use of formal language in conversation with people in the deployment location. (e.g., giving a thank you speech to local country hosts or conducting business negotiations with officials),” “Think about the use of military or technical vocabulary in conversation with people in the deployment location (e.g., training local mechanics, policemen, or soldiers),” and “Think about giving commands in a direct action scenario in the deployment language (e.g., Get down! or Drop the weapon!).” Items were followed by two questions asking participants how often a given activity was performed and how important that activity was to completing core SOF duties. For purposes of analysis, we computed a mean rating for each scale type. The coefficient alphas for these composites were .81 and .80 for importance and frequency ratings, respectively.

Skills. Four language skill domains were included in the TNA survey: speaking, writing, reading, and listening. In addition to Department of Defense designation of these skill domains as central to language capability, they were identified by the previous job analysis as relevant work role requirements for all study partici-
pants. Each skill domain was represented by a single item that asked respondents how often the given language skill was required. These items were rated using the same 5-point frequency scale as the task descriptors.

**Work experience.** Level of work experience was assessed with two separate items. The first was directed at assessing the amount of actual work role experience and asked respondents to indicate how many times they had been deployed on exercises or operations throughout their careers. This item was rated using a 5-point scale ranging 1 (*have not been deployed*), 2 (*1–2 times*), 3 (*3–4 times*), 4 (*5–6 times*), and 5 (*more than 6 times*). The second item assessed job tenure and was rated using a 7-point scale ranging from 1 (*less than one year*) to 7 (*more than 20 years*), with a midpoint of 4 (*9–12 years*).

**Self-efficacy.** Self-efficacy was assessed using a three-item scale. Each item began with the stem “I feel confident in my ability to …” and was followed by a work duty common across SOF personnel and missions. These duties were “use military terminology in the language required by my assignment,” “satisfy minimum courtesy requirements and maintain very simple face-to-face conversations on familiar topics in the language required by my assignment,” and “participate in informal conversations on practical, social, and professional topics in the language required by my assignment.” It is important to note that all three of these activities are requisite the work role requirements of the participants. A mean self-efficacy score was calculated for each individual. The coefficient alpha for this composite was .92.

**Skill proficiency.** Skill proficiency was based on scores on from the Defense Language Proficiency Test (DLPT). The DLPT is an instrument designed by the Defense Language Institute to measure listening and reading proficiency. DLPT is divided into two components (listening and reading tests). DLPT scores on each component can fall into one of seven proficiency categories (0, 0+, 1, 1+, 2, 2+, and 3), with higher scores equating to greater skill proficiency (for more details see Silva & White, 1993). The two DLPT component scores were averaged to create a composite measure of language skill proficiency for each participant. The coefficient alpha for this composite was .93.

**Control Variables**

**Language difficulty.** The specific languages used varied across participants, as did the level of difficulty to learn these various languages. Examples of the languages used by participants during their missions included French, Chinese-Mandarin, Arabic, Spanish, and Thai. To control for the potentially confounding influence of different languages, we assessed language difficulty with a scale used by
military organizations and other government agencies. This scale classifies foreign languages into four general categories that reflect the increasing difficulty of a native English speaker to learn the focal language (Silva & White, 1993). For example, Spanish is classified as a Category I language, German as a Category II, Russian as a Category III, and Arabic as a Category IV. Approximately 47% of the study sample used a Category I language within their work role, 9% used a Category II language, 21% used a Category III language, and 23% used a Category IV language. Language difficulty is often used in military and educational language guidelines and policy. For example, the American Council on Education uses language difficulty as part of the basis for its official recommendations for awarding college credit for scores on some language proficiency assessments (Surface & Dierdorff, 2003).

**Previous training experience.** Another important influence for which to control was whether participants had prior exposure to organizationally relevant (i.e., military or government-sponsored) foreign language training. Controlling for such an influence is critical in that skill proficiency and self-efficacy are likely impacted by prior training experience. For example, prior literature has argued that self-efficacy is an important predictor of training performance as well as an important outcome of training (Kraiger, Ford, & Salas, 1993). The relationship of training with self-efficacy has been supported by previous research as well (e.g., Gist, 1989; Gist et al., 1989). In addition, prior training experience may impact perceptions of work role requirements captured in the TNA ratings. To more accurately examine the relationships among self-efficacy, skill proficiency, and TNA ratings, level of previous training experience was retained as a control variable. Previous training experience was assessed using a three-level measure with values of 1 (no previous training), 2 (initial acquisition training), and 3 (initial acquisition and sustaining/enhancement training). Approximately 25% of the sample indicated no previous experience with language training, 44% indicated experience with initial acquisition training, and the remaining 31% indicated experience with both initial acquisition and enhancement training.

**RESULTS**

Hierarchical regression analysis was used to test the study’s hypotheses (Cohen & Cohen, 1983). Six hierarchical regression analyses were conducted across each type of TNA rating. Hierarchical regressions occurred in three stages. In the first stage, the two control variables representing the difficulty of the respondent’s learned language and the amount of prior training experience were entered. The second stage of the hierarchical regression introduced to the regression equation the two work experience measures. The third and final stage then entered the capa-
bility variables of self-efficacy and skill proficiency. In addition to hierarchical regression analysis, relative weights (Johnson, 2000, 2001) were calculated. Relative weights represent the proportionate contribution that each independent variable makes to the total variance accounted for in the target criterion (i.e., TNA rating), considering both its direct effect (i.e., its correlation with the criterion) and its effect when combined with the other variables in the regression equation (Johnson & LeBreton, 2004). Relative weights are particularly useful when independent variables are significantly correlated.

Table 1 displays the descriptive statistics for study variables. Language difficulty was significantly and inversely related to all but two types of TNA ratings (speaking and listening skills). Previous training experiences as well as the work experience measures were generally unrelated to the TNA ratings. Self-efficacy was significantly and positively related to all TNA ratings. Self-efficacy tended to be more highly related to ratings using scales of frequency than importance. Skill proficiency was significantly and positively related to all ratings and tended to show stronger relationships to frequency ratings. In addition, skill proficiency was more highly related to TNA ratings than was self-efficacy.

Table 2 displays the results of the six hierarchical regressions. With the exception of listening and speaking skill ratings, significant variance was accounted for by the study’s control variables. The control variable of previous training experience was a significant predictor of task importance ratings only ($\beta = -.11$), whereas language difficulty was a significant negative predictor of all TNA ratings except for listening skills. The addition of the two work experience variables did not lead to any significant increases in variance accounted for beyond the control variables. However, introducing self-efficacy and skill proficiency led to significant increases in $R^2$ for all types of TNA ratings. The mean $\Delta R^2$ from the addition of self-efficacy and skill proficiency was approximately .13.

Hypothesis 1 predicted that work experience would be related to TNA ratings. Overall, the two work experience measures were not predictive of TNA ratings. Actual work experience did significantly predict frequency ratings of task ($\beta = .23$) and listening skills ($\beta = .14$), with more experienced individuals providing higher ratings. Thus, Hypothesis 1 was largely unsupported by the findings.

Hypothesis 2 predicted that self-efficacy would be related to TNA ratings. This hypothesis received little support in that self-efficacy significantly predicted only ratings of task frequency ($\beta = .18$). This finding indicates that high-efficacious individuals rate job tasks as being performed more often than low-efficacious individuals in the context of needs assessment.

Hypothesis 3 predicted that skill proficiency would be related to TNA ratings. Skill proficiency significantly predicted all rating types, with standardized beta estimates ranging from .25 to .44. In addition, the influence of skill proficiency varied across descriptor and rating scale. Taken collectively, these findings provide
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*Note.* Skills rated using frequency scales; all correlations over .17 are significant at \( p < .01 \), those over .14 are significant at \( p < .05 \).
support for this hypothesis and indicate that individuals with greater skill proficiency provide higher ratings on both tasks and skills.

Table 3 displays the results of the relative weight analyses. The values in the table are percentages of total variance accounted for in each TNA rating type (e.g., task frequency), taking into account both direct effects of a particular predictor and effects when combined with the other independent variables. In general, the results mirror those of the hierarchical regressions. The relative contribution of skill proficiency to TNA ratings variance was more than double that of self-efficacy for all TNA ratings except for task frequency for which the relative contributions were

**TABLE 3**
Relative Contribution of Study Predictors to Training Needs Assessment Ratings Variance

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Tasks Frequency</th>
<th>Tasks Importance</th>
<th>Speaking Skills</th>
<th>Listening Skills</th>
<th>Reading Skills</th>
<th>Writing Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language difficulty</td>
<td>16.7</td>
<td>31.5</td>
<td>5.3</td>
<td>2.3</td>
<td>9.9</td>
<td>26.2</td>
</tr>
<tr>
<td>Previous training</td>
<td>1.5</td>
<td>6.6</td>
<td>18.0</td>
<td>0.1</td>
<td>0.7</td>
<td>6.9</td>
</tr>
<tr>
<td>Job tenure</td>
<td>0.8</td>
<td>0.8</td>
<td>0.3</td>
<td>1.6</td>
<td>0.3</td>
<td>1.9</td>
</tr>
<tr>
<td>Actual work experiences</td>
<td>11.0</td>
<td>0.9</td>
<td>3.8</td>
<td>6.5</td>
<td>1.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>33.3</td>
<td>19.4</td>
<td>16.8</td>
<td>15.3</td>
<td>18.7</td>
<td>16.5</td>
</tr>
<tr>
<td>Skill proficiency</td>
<td>36.6</td>
<td>40.9</td>
<td>55.8</td>
<td>74.1</td>
<td>69.4</td>
<td>48.3</td>
</tr>
</tbody>
</table>

*Note. Relative importance calculated using relative weights (Johnson, 2000); values are percentages of total variance accounted for in each dependant variable (e.g., speaking skills).
very similar (33% and 36% for self-efficacy and skill proficiency, respectively). On average, skill proficiency accounted for over 50% of the predictable variance across the six types of TNA ratings. The influence of skill proficiency relative to self-efficacy was especially large for skill ratings.

Although not explicitly hypothesized, there are reasons to expect skill proficiency and self-efficacy to have differential effects across TNA ratings using different scales and on different work descriptors. As previously discussed, such differential effects due to scale and descriptor have been evidenced in prior job analysis research (e.g., Conte et al., 2005; Dierdorff & Wilson, 2003). To examine these effects we conducted tests for significant differences between dependent correlations (Blalock, 1972; Steiger, 1980). We used part (semipartial) correlations as input into these tests to control for shared variance among the independent variables. Results indicate that both self-efficacy and skill proficiency showed significantly stronger relationships with task frequency ratings than with task importance ratings, \( t(199) = 6.95 \) and 8.83, \( p < .01 \), respectively. When comparing the impact of self-efficacy across task and skill ratings, of the eight possible comparisons only one was significant (between task frequency and speaking skill ratings), \( t(199) = 1.83, p < .05 \). However, differential effects for skill proficiency across task and skill ratings were evident for six of the eight possible comparisons. Skill proficiency did not display differential effects for ratings of speaking skill compared to task importance and frequency ratings, \( t(199) = .58 \) and .77, \( ns \), respectively.

DISCUSSION

The general goal of this research was to investigate the potential influence of work experience, self-efficacy, and skill proficiency on various types of TNA ratings. These ratings used scales of importance and frequency, and captured training needs in regard to tasks and skills. Overall, our results indicate that individual differences, such as self-efficacy and skill proficiency, are significantly related to these ratings. However, when collectively considered, skill proficiency appears to be the more powerful of these influences. The results of this study make a significant contribution to the training literature by specifically answering previous calls for TNA research (e.g., Salas & Cannon-Bowers, 2001).

Contrary to predictions, our findings indicate that individuals’ levels of work experience are largely unrelated to subsequent TNA ratings of tasks and skills. However, these results are not surprising per se considering the mixed findings for experience found in the general job analysis literature. Relevant to TNA ratings, some research indicates that experience is related to training emphasis ratings of job tasks (Ford et al., 1993). In our study, this finding is minimally replicated as one of our work experience measures was significantly correlated with task frequency ratings and listening skill frequency ratings. One possible explanation for
these differing results could be the nature of our experience measures. Ford and colleagues used very specific measures of activity-level and breadth of task experience, whereas we used more general measures of tenure and breadth of job experience (amount of actual work experiences). This difference in level of specificity of the experience measures may very well impact subsequent relationships. Moreover, there are several other conceptualizations of work experience such as those delineated by Quiñones and colleagues (1995) that are potentially relevant to TNA ratings. For example, the quality or type of work experience, such as job complexity or task criticality, may influence individuals’ ratings of training needs.

Another explanation could stem from the inclusion of language difficulty as a control, which was significantly related to the majority of TNA ratings. It is possible that task difficulty, as a form of task complexity, could be a moderating influence on experience and ratings. The nature of the training needs being assessed in this study may also have influenced the experience-ratings relationships. Whereas task-focused TNA typically captures ratings on specific work activities, our task ratings involved the use of language in accomplishing work-related activities. Perhaps this overlaying characteristic involves an additional dynamic to work experience, or that the influence of work experience on TNA ratings could be nonlinear in nature, a possibility suggested by others (e.g., Ford & Kraiger, 1995). Future research is needed to more thoroughly examine exactly how aspects of work experience, task or skill complexity, and descriptor specificity (task, skill, knowledge, etc.) impact TNA ratings.

Partially supporting our hypotheses, results suggest that levels of raters’ self-efficacy and skill proficiency are significantly related to their ratings of training needs. These findings appear to span rating scale (frequency and importance) and work descriptor (skills and tasks), suggesting that highly proficient and efficacious individuals are more likely to rate tasks and skills as more important and performed more frequently. However, what stands out most from the hierarchical regression and relative weight results is that of these two personal capability factors, skill proficiency clearly plays the dominant role in predicting TNA ratings. Comparatively, an individual’s skill proficiency significantly predicted all six types of TNA ratings, whereas self-efficacy only predicted a single rating type (task frequency). These findings suggest that an individual’s actual capability (skill proficiency) is a much more potent influence on ratings of training needs than that of his or her perceived capability (self-efficacy). However, when it comes to identifying the most frequently performed tasks to be trained, our results indicate that both actual proficiency and the confidence of the raters should be considered. Because both task importance and frequency of performance are central components of the opportunity to perform construct relevant to learning transfer, these findings point to an interesting area for future research; namely, research that examines relationships between TNA ratings, individuals’ opportunities to perform, and their capabilities to engage performance.
One potential explanation for actual capability having a more potent influence on TNA ratings could stem from raters engaging in some form of impression management, in which lower skilled individuals downplay the criticality of tasks and skills requisite to their work roles. Evidence of similar effects has been recently demonstrated in the job analysis literature and is generally discussed as rater self-presentation (e.g., Morgeson et al., 2004). The exact reasons for our study’s participants engaging in these rating strategies is unclear, however, some researchers have suggested such tactics are influenced by heavy emphasis on high performance standards and even organizational politics (e.g., Clarke, 2003). It is important to note that our respondents were well aware of their skill proficiency, and this knowledge likely influenced their levels of self-efficacy, despite the job-focused nature of the measure. Future research is necessary to more thoroughly investigate the impact of self-presentation on TNA ratings, as well as identify potentially important work context factors.

For the training practitioner, our results further emphasize a point of concern previously raised by Ford and colleagues (1993) when they stated, “ratings of what should be trained may be more in the eye of the beholder than previously acknowledged in the literature” (p. 589). In other words, the differences in ratings may be due to idiosyncratic perceptions rather than actual training needs. Our results indicate that skill proficiency is one such influence and is reflected in ratings of skill and task descriptors. These findings have practical implications ranging from the selection of subject matter experts for TNA to the accuracy or utility of decisions based on training needs ratings. Assuming that well-designed training programs are predicated on these ratings, differences in judgments of training needs due to individuals’ own skill proficiencies and not overall work role requirements becomes potentially problematic. Consider as an example the situation where an organization is conducting a needs assessment to inform the design and development of a refresher or retraining program. Here, our results suggest that individuals most likely to benefit from such a training endeavor (i.e., those with low skill proficiency) are also those less likely to indicate that particular skills and tasks are indeed important and frequently performed. To illustrate such effects, we conducted a +1/–1 standard deviation split of our sample based on skill proficiency scores. For all eight types of TNA ratings individuals of low skill proficiency consistently provided significantly lower mean ratings ($p < .001$). The average effect size was .77, indicating that actual capability has medium to large effects (Cohen, 1992).

As the aforementioned illustration highlights, the actual capability of respondents can have considerable practical ramifications on training decisions using mean ratings of training needs. However, it is also interesting to note that these implications can relate to both task-focused and person-focused approaches to capturing training needs. When ratings are derived within task-focused TNA, the differences between high- and low-skilled individuals could easily translate into incomplete training curricula. This assumes, of course, that the TNA ratings pro-
vided by job incumbents are indeed valid or accurate. Important to note is that the validity and accuracy of work requirement ratings can be viewed from several perspectives, ranging from the quality of inferences drawn from the data (Morgeson & Campion, 2000) to the eventual use of the data (“consequential validity”; Sanchez & Levine, 2000). Our study did not seek to examine the validity or accuracy of TNA ratings but rather investigated individual-level variables to test whether they could account for variance in task- and skill-related TNA ratings. Because high-stake decisions are often made using TNA ratings, future research is clearly needed to address issues of validity in TNA ratings and the quality of inferences rendered from such data.

Person-focused TNA attempt to capture information regarding whom to train and whether these individuals are “ready” for training (Noe, 2005). Thus, both self-efficacy and skill proficiency are variables very likely to be captured during person-focused TNA. In this case, data would readily exist for practitioners to proactively investigate possible biasing effects, rather than simply assuming away or ignoring such influences. Unfortunately, the extent to which a thorough multifaceted TNA is typically conducted does not appear promising. For example, in the meta-analysis of training effectiveness by Arthur et al. (2003), only 1% of the usable data came from studies conducting more than one facet of TNA (e.g., task- and person-focused assessment). Important to note is that we included only a few individual-level factors in our research. Certainly, many more have proven relevant to training research and are typically captured in person-focused TNA (e.g., motivation to learn, resistance to training, etc.). These factors appear ripe for exploration by future research. As previously noted by Ostroff and Ford (1989), special attention should be given to the potential relationships that may exist across various levels of TNA as well.

In addition to those already discussed, some limitations associated with the research presented here should be noted. First, participants were from a military organization, which may impact the generalizability of our findings. It is important to note, however, that the specific needs assessed were indeed central to the performance of participants’ work roles and that there are many other jobs and occupations that have similar critical foreign language requirements (e.g., interpreters, 911 operators, police officers, etc.). Second, although individuals provided ratings on scales commonly used for TNA (importance and frequency), there are clearly other available rating scales. For example, ratings of difficulty or training emphasis can be used to capture training needs and such scales may not be similarly affected as those in this study.

A third limitation extends from the nature of the work descriptors used in the study presented here. Both tasks and skills items were intended to be generic in order to be applicable across all participants’ work roles. Skills were also rated using single items. Clearly, more specific descriptors and multiple item scales could be used to capture TNA information, which may limit the generalizability of our findings. A final limitation relates the scope of our research. We examined a single atti-
tudinal variable (self-efficacy) for its impact on TNA ratings. Although self-efficacy is highly relevant to training as both a predictor of success and an important outcome, other attitudes may be influential as well, such as goal orientation or valence of training. Moreover, such individual factors could exhibit curvilinear effects on TNA ratings such that at a certain point their influence attenuates. It is important to note that each of these limitations can be directly addressed by future empirical work.

In conclusion, our research shows that individual factors influence both skill and task ratings in training needs assessment. For the training practitioner, we hope these findings highlight the importance of considering exactly how individuals may systematically differ in their perceptions of training needs. We also hope that this study will lead researchers to conduct more expansive empirical work within the realm of training needs assessment, which has been a much-neglected area of training and development research.

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REFERENCES


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