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The Effects of Rating Source, Rating Target, and Job Position on Ratings of Perceived Training Needs

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THE EFFECTS OF RATING SOURCE, RATING TARGET, AND JOB POSITION ON

RATINGS OF PERCEIVED TRAINING NEEDS

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ABSTRACT

THE EFFECTS OF RATING SOURCE AND TARGET ON RATINGS OF PERCIEVED
TRAINING NEEDS

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Organizational investments in employee training and development have steadily
increased over the past decade, with a recent estimate of $160 billion dollars annually. An
important component of any training program is the subsequent training needs assessment
(TNA), which provides critical information regarding who and what needs trained.
Unfortunately, TNA research is severely limited compared to other aspects of the training
process. The primary aim of the current study was to examine two important variables that can
potentially influence TNA ratings beyond an actual need for training, the source and target of
TNA ratings. Based on the assumptions of attribution theory, it was hypothesized that employees
will generally underrate their own need for training in comparison to the TNA ratings that others
ascribe to them (source effect), and the TNA ratings that they ascribe to others (target effect).
The secondary aim of the current study was to content validate the TNA ratings obtained via a
TNA, based on an employee's job position as a supervisor or non-supervisor. Using extant
competency models, it was hypothesized that supervisors will rate a greater need for training
than non-supervisors in areas relevant to their role as a supervisor. To achieve these aims, the
current study analyzed archival data from a needs assessment project of a municipality on the
East Coast. A total of 1,271 participants provided data regarding their own training needs and the
training needs of their supervisor/subordinates. Results indicated mix support for the effect of
rating source and rating target on TNA ratings, and partial support for the differentiation of TNA

ratings based on job position. Taken together, findings from this study provide insight into the effect of a self-serving bias in the context of TNA ratings, and provides practitioners with evidence based information regarding the measurement of training needs, such as who should provide TNA ratings (source) and if the TNA rating source(s) should rate themselves, someone else, or both (target). Additional evidence is presented regarding the validity of inferences made from TNA ratings obtained via a TNA based on differences in self-ascribed TNA ratings between supervisors and non-supervisors.

This thesis is dedicated to my amazing girlfriend, Jenna, who selflessly moved to Norfolk, Virginia with me three years ago. I am incredibly grateful to have you with me during this journey. Thank you for your unwavering support.

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CHAPTER I

INTRODUCTION

Organizations are most likely to accomplish their goals when they maximize the talent of their employees through properly designed employee training and development programs (Kraiger, Passmore, Santos, & Malvezzi, 2014; Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012). Recent estimates indicate that U.S. organizations invest over $160 billion annually in employee training, a number that has increased substantially over the years (Miller, 2013; Paradise, 2007). The value of investing in employees' skills and knowledge to increase productivity has long been recognized and supported by research demonstrating the effectiveness of employee training in enhancing individual, unit, and organizational performance (Aguinis & Kraiger, 2009; Kraiger, 2014; Salas et al., 2012; Schultz, 1961). Subsequently, training efforts and associated expenses are being perceived as important as any other type of financial investments within the organization (Mattioli, 2009). However, certain aspects of the organizational training process (e.g., needs assessment) have received much less attention by training researchers and practitioners than others (e.g., training methods and effectiveness; Ferreira, da Silva Abbad, & Mourao, 2015).

A critical component of any training program is conducting the requisite training needs assessment (TNA), which has been defined as "a systematic process that applies work analysis techniques and procedures to identify and specify training requirements that have been linked to deficiencies in individual, team, or organization performance to develop learning objectives to address the identified deficiencies" (Surface, 2012, p. 437). A TNA is important because the quality of the information obtained by the needs assessment contributes significantly to the success of the entire training program (Ferreira et al., 2015). The data obtained by a TNA can

provide important information to organizational decision-makers about (a) the nature of performance problems or deficiencies, (b) the appropriateness of training as a solution, (c) the type of training objectives, content, methods, and evaluation criteria, (d) the level of support for training and its transfer to the workplace, (e) the readiness and motivation of trainees, and (f) the potential return on investment in training (Goldstein, 1993; Noe, 2008). Despite the importance of conducting a TNA, an overwhelming majority of organizations seemingly neglect this important step, and little research has explicitly investigated various aspects of the TNA process and/or the validity of the inferences made based on TNA results (Ferreira & Abbad, 2013).

Arthur, Bennett, Edens, and Bell (2003) examined in their meta-analysis nearly 400 studies that met their inclusion criteria for reporting on the effectiveness of an organizational training program. However, only a mere six percent (total of 22) of the studies analyzed reported that a TNA was conducted prior to the training and development program. These findings were echoed by Kraiger's (2003) review of training and development research, in which he concluded that many training programs are initiated without conducting a needs assessment. Kraiger also noted a dearth of TNA research and theory development at that time, a concern echoed by more recent reviews (Aguinis and Kraiger, 2009; Ferreira et al., 2015). Within the organizational training literature, studies concerned primarily with TNA are much scarcer than research concerned with other aspects of training, such as different training methods or organizational outcomes of training (Kraiger, 2014; Kraiger & Cavanagh, 2014). More research is needed to better understand the TNA phase of the training process not only because it has been understudied, but also because it is an important step to improve the quality of the subsequent training program (Ferreira et al., 2015).

Most of the TNA research has focused on variables that have extraneous effects on TNA ratings or factors that influence TNA ratings beyond an actual need for training. For example, Dierdorff and Surface (2007) examined how self-ratings of perceived training needs may be affected by an individual's work experience, self-efficacy, and skill proficiency. Other studies have examined how TNA ratings are affected by demographic variables (e.g., age, gender; Bibby, 2001; Fraser, Blumenthal, Benard, & Lyasere, 2015; Patton, 2000; Burke, 1996; Shann, Martin, & Chester, 2014). An important independent variable that has received some attention but has not been studied extensively in terms of its effect on TNA ratings is the source of TNA ratings. Although a variety of TNA rating sources exist, the most typical are job incumbents (those currently performing the job) and their managers and/or subordinates (Bibby, 2001; Ford & Noe, 1987). Thus, TNA ratings can be self-assessed (an employee rating their own training needs) and/or ascribed by someone else (e.g., supervisors, peers, or subordinates rating another employee). To date, only three studies have explicitly examined the effects of rating source on TNA ratings (Arnold & Davey, 1992; McEnery & McEnery, 1987; Staley & Shockley – Zallabak, 1986), each concluding that self-ratings of perceived training needs tend to be more lenient (less of a need for training) than ratings from supervisors.

The previous studies examining source of TNA ratings were conducted over 20 years ago and more importantly, focused exclusively on making a downward comparison between employees' self-assessed TNA ratings and the TNA ratings ascribed to them by their supervisors. What was not measured were supervisors' self-assessed TNA ratings and the differences between supervisors' self-assessed TNA ratings and the TNA ratings ascribed to supervisors by subordinates. This limitation restricts the examination of source effects on TNA ratings to only employees who rate their own need for training and have their training needs rated by their

supervisor. To provide a more complete picture of the potential effect that the source of TNA ratings has on TNA ratings, the current study will make bi-directional comparisons between ratings of employees in non-supervisory and supervisory positions. For example, TNA ratings that non-supervisors ascribe to themselves will be compared with the TNA ratings supervisors ascribed to non-supervisors. Conversely, the TNA ratings supervisors ascribe to themselves will be compared with the TNA ratings that non-supervisors ascribed to their supervisors.

Additionally, previous research has not examined the effect that the target of TNA ratings might have on TNA ratings. The target of TNA ratings refers to the person whose training needs are being rated, and can either be oneself or someone else. Findings from this study will provide insights into whether self-assessed TNA ratings (target being oneself) differ systematically from the TNA ratings that same individual ascribes to someone else (target being someone else). When examining the effect of target on TNA ratings, the source of the TNA ratings remains the same and can be either supervisors or non-supervisors. The TNA ratings supervisors ascribe to themselves will be compared to the TNA ratings they ascribe to non-supervisors. Similarly, the TNA ratings non-supervisors ascribe to themselves will be compared to the TNA ratings they ascribe to supervisors. If significant differences emerge between TNA ratings of different targets from the same source, then it would provide support for the potential effect that the target of TNA ratings could have on TNA ratings.

Theoretically, the expected effect of source and target on TNA ratings is surmised to stem from an overarching propensity for individuals to seek opportunities to enhance their self-esteem (Lance, Hoffman, Gentry, & Baranik, 2008). Based on the fundamental assumptions of attribution theory, different individuals assuming different roles come to different conclusions regarding the underlying causes of a particular behavior (Kelley & Michela, 1980). Kelly and

Michela note that this difference is due in large part to different motivations underlying the ratings and differences in the available contextual information to consider while making the ratings. More specifically, Jones and Nisbett (1972) suggest that individuals engaging in a behavior are more likely to make favorable attributions regarding the cause of their behavior than someone else. These attributional differences manifest in a self-serving bias such that self-ratings display greater leniency than ratings from others (Lance, et al., 2008).

The current study will investigate the potential effects of attribution theory in the context of a TNA by examining the difference in TNA ratings based on the source and target of the TNA ratings. It is proposed that individuals will be more likely to provide lower TNA ratings (indicative of a lesser need for training) for themselves in comparison to the TNA ratings ascribed to them by someone else. Stated differently, TNA ratings are expected to display a lesser need for training when the source of TNA ratings is oneself versus someone else. It is also proposed that individuals will be more likely to provide lower TNA ratings (indicative of a lesser need for training) for themselves in comparison to the TNA ratings they ascribe to someone else. Stated differently, TNA ratings are expected to display a lesser need for training when the target of the TNA ratings is oneself versus when the target of TNA ratings is someone else. These expected differences in TNA ratings based on the source and target of the TNA ratings stem in part from the propensity for individuals to protect their self-esteem (Lance et al., 2008) and be motivated to present themselves favorably to others (Kelley & Michela, 1980). A TNA serves as a potential opportunity for employees to engage in a self-serving bias by underreporting their true need for training and presenting themselves as more competent in areas then they may believe they really are. Furthermore, the self-serving bias proposed to be at the root of

differences in TNA rating is expected to be of greater influence during self-ratings than when rating others because of the direct threat to one's self-esteem.

A more fundamental understanding of the effects that source and target could potentially have on TNA ratings is of significant practical importance as well. This information is critically important for practitioners planning a training program, who must decide which sources to solicit for TNA ratings, which targets those sources are going to provide TNA ratings for, and subsequently, how to interpret the resulting TNA ratings. In their seminal work, McGehee and Thayer (1961) noted that training is a means by which organizations can achieve their goals, and in order for training to be successful, there needs to be a systematic assessment of the people who require training and in what areas they need to be trained. A careful assessment of TNA data should include a consideration of the potential effects that the source and target of TNA ratings may have on levels of reported employee training needs. It is a goal of the current study to provide empirical evidence for the different effects of source and target on TNA ratings.

The primary purpose of the proposed study is to seek an answer to the question: Are perceived training needs affected by the source and/or target of TNA ratings? Of interest are the potential effects (if any) that the source and target of TNA ratings have on mean levels of reported TNA ratings? To answer this question, the current study will use archival TNA data, collected from a large sample of municipal employees. Employees were instructed to provide self-ratings of their own perceived training needs, and then asked to identify themselves as either a supervisor or non-supervisors. Subsequently, employees who identified as supervisors were instructed to rate the perceived training needs of their subordinates, and non-supervisors rated the perceived training needs of their supervisors. These different groups of ratings will be compared to test the effect of source and target on TNA ratings.

A secondary purpose of this study is to provide evidence for the validity of the inferences made based on TNA ratings obtained via a TNA. Per the Standards for Educational and Psychological Testing (2014), validity is the extent to which evidence and theory support the purpose for which test scores are being used. In the context of the current study, the question becomes: Do TNA ratings accurately reflect employees' training needs pertinent to their job positions? Or restated: Can TNA ratings differentiate employees' training needs based on their job positions? This purpose will be achieved by examining differences in TNA ratings based on employees' job position. More specifically, the self-assessed TNA ratings of supervisors and non-supervisors will be compared to see if certain competencies which are more relevant to supervisors are rated higher (indicative of a greater need for training) by supervisors than non-supervisors. The results from this part of the study will provide insight into the validity of the TNA as a methodology to obtain relevant employee TNA ratings by revealing the extent to which employees' TNA ratings are differentiated based on the requirements of their job as a supervisor or non-supervisor.

Table 1 details how the current study will be structured, using different groups of TNA ratings based on source, target, and job position. To examine the effect of rating source on TNA ratings, the self-ratings from one source will be compared with the other ratings from the other source (1 with 4 and 3 with 2). To examine the effect of rating target on TNA ratings, the self-ratings from one source will be compared with the other ratings from that same source (1 with 2 and 3 with 4). Finally, to examine the effect of job position on TNA ratings, self-ratings from different sources (supervisors and non-supervisors) will be compared (1 with 3).

Table 1

Comparing Training Needs Assessment (TNA) Ratings by Source, Target, and Job Position

Source of TNA Ratings	Target of TNA Ratings	
	Self	Other
Supervisor	1	2
Non-supervisors	3	4

In conclusion, training and development activities represent a significant investment in human capital for organizations (Miller, 2013). An extremely important component of any training program is to first identify the training needs of current employees through a TNA (Goldstein, 1993). Unfortunately, most organizations have a propensity to rush right into training without identifying gaps between the current and desired performance states of employees (Arthur et al., 2013). Moreover, when a needs assessment is conducted prior to training, little consideration is given to factors than can potentially influence TNA ratings beyond an actual need for training (Ferreira & Abbad, 2013). The current study will seek to better understand two specific variables which are expected to influence TNA ratings, the source and target of the TNA ratings. Additionally, this study will seek to provide evidence for the validity of TNA ratings, measured by a TNA, as a way to capture relevant employee training needs by examining the expected differences in self-reported TNA ratings based on job position (supervisor and non-supervisor).

CHAPTER II

TRAINING NEEDS ASSESSMENT

A training needs assessment (TNA) is an essential part of any training program, because it serves to identify where and when an organization should invest in training and development (Brown & Sitzmann, 2011; Surface, 2012). More specifically, a TNA is "a systematic process of collection, analysis and interpretation of data on individual, group and/or organizational skill gaps" (Ferreira & Abbad, 2013, p. 79). Brown and Sitzmann (2011) concisely summarize the TNA process in terms of its purpose to identify when an organization should allocate resources toward training and who would benefit the most from training. Similarly, Salas and colleagues (2012) refer to the TNA process as a diagnostic tool that identifies what and who needs to be trained, as well as the organizational system in which the training should occur. Finally, Surface (2012) broadly defines TNA as a systematic process used to identify deficiencies that require training at the individual, group, and organizational levels. Per Goldstein's (1974, 1980) instructional system design (ISD) model, the first step in any training program should be a TNA.

A well-conducted TNA provides organizations with invaluable information regarding where training is needed, what needs to be taught, and who needs to be trained (Goldstein, 1993). The quality of the information ascertained by the TNA is a key determinant of how successful the subsequent training program will be (Ferreira et al., 2015). Furthermore, conducting a TNA ensures that the knowledge, skills, and abilities being trained align with the overarching organizational goals (Surface, 2012).

For all the benefits of a well-conducted TNA, there are negative consequences of an improperly conducted TNA. As outlined by Noe (2008), these negative repercussions include: using training to solve a problem that training is unable to solve, training the wrong people, and

developing and implementing training programs with content and objectives that are not tied to organizational goals. Considering the financial investments associated with training (approximately $160 billion annually; Miller, 2013), a poorly conducted TNA can set a training program up for failure before it is even developed. Despite the invaluableness of a thoughtful and systematic TNA for ensuring that training improves performance, most training initiatives disregard this crucial step (Brown & Sitzmann, 2011; Ferreira et al., 2015).

IDENTIFYING TRAINING NEEDS

Training needs have been defined and theorized differently over time (Ferreira et al., 2015). According to McGehee and Thayer (1961), a training need results from underdeveloped skills, insufficient knowledge, and/or inappropriate worker attitudes. Others have suggested that a training need is the difference between what the organization expects of their employees and the employees' current performance (Mager & Pipe, 1979). Alternatively, a training need can be defined more abstractly as the discrepancy between "what is" and "what should be" (Ferreira & Abbad, 2013), or between "the way things are" and "the way things ought to be" (Burton & Merrill, 1977). Asku (2005) explained a training need as the gap between actual success and "hoped-for" success. Finally, Cascio and Aguinis (2011) defined specific training needs as "the components of job performance that are relevant to the organization's goals and the enhancement of which through training would benefit the organization" (p. 350). Embedded in each of these conceptualizations of training needs is some type of gap between the current performance of employees and a more elevated, desired performance state which would assist the organization in achieving its larger goals.

Although different methods exist to identify training needs (Kraiger & Cavanagh, 2014), most involve three types of analysis first proposed by McGhee and Thayer (1961) in their

seminal work: a) organization analysis, b) job/task analysis, and c) person analysis. The importance of McGhee and Thayer's (1961) three-facet approach to uncover training needs cannot be overstated. Salas and colleagues (2012) emphasize the importance of always conducting a systematic and thorough TNA, proposing that it is probably the most important step for effective training design and delivery. Whereas each of these three types of analyses alone provides important information regarding training needs, Cascio and Aguinis (2011) suggest that the most successful TNAs conduct all three analyses (organization, job/task, and person) in a continuous, coherent manner. Each type of analysis is explained in more detail below.

Organizational analysis. The purpose of organization analysis, as described by McGhee and Thayer (1961), is to determine "where within the organization training emphasis can and should be placed" (p. 25). The focus of this analysis is on the strategic priorities of the organization and characteristics of the work environment (Salas et al., 2012; Brown & Sitzmann, 2011). An organizational analysis can be used to determine if training is appropriate given the organization's current strategy and available resources to conduct the training (Noe, 2008). Conducting an organizational analysis is twofold because it involves examining both the strategic alignment and environmental readiness components (Salas et al., 2012).

First, using a TNA to align training with strategy requires an in-depth investigation of the chief business goals, current challenges, the jobs and functions most important to the organization's success, and what the organization must excel at to be competitive (Tannenbaum, 2002). The organizational analysis links the actual training to organizational objectives and ensures that training is used to solve business relevant problems (Noe, 2008; Surface, 2012). Second, for training to be effective there must be an organizational environment that facilitates training success (Salas et al., 2012). To assess environmental readiness, it is important to

examine factors that can influence training effectiveness and the transfer of training, such as a supportive organizational culture (Rouiller & Goldstein, 1993), social support for training (Thayer & Teachout, 1995), and support for learning (Flynn, Eddy & Tannenbaum, 2005). In addition, it is also important to consider potential constraints that may inhibit effective transfer of training, thus affecting overall training effectiveness (Surface, 2012). Salas and colleagues (2012) recommend that organizations conduct an organizational analysis to assess the strategic requirements and the environmental factors of the organization, and how that can either support or inhibit the training initiative.

The organizational analysis will help answer the important question of whether training will result in employee performance changes that will help the organization accomplish its goals (Cascio and Aguinis, 2011). Previous research has shown that different strategic objectives require different types of training (Noe, 2008), and different organizational environments influence the training that is offered (Goldstein & Ford, 2002). Therefore, before any ratings of training needs can be gathered, it is paramount to conduct an organizational analysis.

Task analysis. The purpose of task analysis, which McGhee and Thayer (1961) refer to as "operations analysis," is to determine what the training program should consist of. During this stage of analysis, consideration is given to the content of the training program in terms of what is required for effective performance on the job (McGhee & Thayer, 1961). According to Surface (2012), task analysis identifies the capabilities required for desired performance. The data gathered during this stage should identify the critical tasks of a job and the knowledge, skills, abilities, and other attributes (e.g., attitudes, motivation), also known as KSAOs, necessary to effectively complete the tasks required by the job (Brown & Sitzmann, 2011; Salas et al., 2012).

According to Surface, the goal of this analysis is to identify what must be learned to ensure training is relevant to an employee's job requirements.

The more an organization understands the tasks and KSAOs required for effective performance in a particular job, the more effective training learning objectives can be (Surface, 2012). Noe (2008) emphasized the criticality of identifying important tasks knowledge, skills, and behaviors to be targeted in training if employees are expected to improve their performance on the job. To that end, Noe acknowledged a trend for TNA to focus on competencies, or areas of "personal capability," that help employees complete relevant tasks and successfully perform their jobs (p. 114). In their seminal work on competency modeling, Schippmann and colleagues (2000) indicated that the term competency is most often used to describe effective performance or sufficient knowledge. Furthermore, competencies can be grouped together to form a competency model, reflecting the critical job requirements for a particular job (Schippmann et al., 2000). Competency modeling is an extremely relevant form of task analysis for training and development applications, and this approach has been often used in research and practice (Shippmann et al., 2000).

In general, however, organizations tend to bypass conducting any type of systematic task analysis due to the time and resources required (Salas et al., 2012). Instead, many organizations simply ask employees what type of training they want to take (Noe, 2008). This approach is deficient because it does not critically analyze the work functions of different jobs and the competencies employees need to effectively perform those jobs. It also does not link work requirements to the strategic objectives of the organization, in the way competency modeling does (Shippmann et al., 2000).

The current study will use extant competency models on supervisory performance (Bartram, 2005; Boreman & Brush, 1993) to assess the differences and similarities in TNA ratings based on an employee's job positions (i.e., supervisors and non-supervisors) and the associated competencies. This follows an early argument that employees' needs for training should be linked to aspects of their jobs (McGhee & Thayer, 1961). These findings will provide evidence for the validity of TNA ratings, obtained via a TNA, in identifying training needs relevant to an employee's job positions.

Person analysis. The purpose of person analysis, referred to by McGhee and Thayer (1961) as man analysis, is to determine "how well a specific employee is carrying out the tasks which constitute his job" and "what skills must be developed, what knowledge acquired, and what attitudes engendered if he is to improve his job performance" (p. 88). In other words, person analysis determines who needs training, in which areas they need to be trained, if the trainees are ready for the training, and how training methods should be adapted to trainees to optimize learning (Salas et al., 2012). According to Brown and Sitzmann (2001), the TNA data obtained during person analysis helps determine if performance deficiencies are a result of deficient job-related KSAOs and if those deficiencies can be fixed with training.

A variety of methods exist to conduct person analysis. Often, preexisting employee data, such as performance reviews, are used to determine how current performance compares to a desired performance states (Chen & Hung, 2012). Furthermore, a person analysis is also commonly conducted by surveying or interviewing employees to assess their own, or others' training needs (Goldstein, 1993). However, some previous research has expressed skepticism regarding employees' ability to accurately express their own training needs because they may be too biased to reliably assess their own strengths and weaknesses (McEnery & McEnery, 1987).

Resultantly, multisource ratings of training needs have been used to assess the specific training needs of employees by gathering data from multiple sources such as supervisors, subordinates, peers, and the trainees themselves (Horng & Lin, 2013).

This study intends to take a more nuanced view of the person analysis phase by explicitly comparing TNA ratings from multiple sources and on multiple targets. The resulting analyses will offer evidence to address the skepticism of using self-assessed training needs, stemming from the potential for biases to convolute self-ratings. Evidence of some effect of a potential bias in self-ratings will emerge if self-assessed TNA ratings are: 1) significantly lower (lesser of a need for training) than TNA ratings ascribed to the same target by someone else (source effect), and 2) significantly lower (lesser of a need for training) than the TNA ratings ascribed to someone else by the same person (target effect). Alternatively, if different groups of TNA ratings do not significantly differ, then it would suggest that rating biases have little to no effect on TNA ratings.

Surface's (2012) four-phase TNA process. Recent TNA research, although generally limited, has been predominantly concerned with reframing what information is obtained during the TNA process (Kraiger & Cavanagh, 2014). The four-phase TNA process proposed by Surface (2012) highlights these attempts. Perhaps the most unique contribution of Surface's model compared to the seminal model first proposed by McGhee and Thayer (1961) is the idea of a TNA trigger (Kraiger & Culbertson, 2013). A TNA trigger refers to an "actual or perceived deficiency" which is "communicated as a red flag from some other source of information, such as an employee survey, or triggered by an event, such as the implementation of a new manufacturing process" (Surface, 2012, pg. 440). As Surface notes, there are a variety of potential sources or events that can serve as the impetus for conducting a TNA. By means of

these potential triggers, Kraiger and Cavanagh (2014) explained that Surface's process is unique in that it clearly addresses a perceived organizational or job-level need resulting from a deficiency that has become evident to organizational decision makers. The TNA process proposed by Surface amplifies the importance of the current study because a TNA is conducted as a result of a need being made evident. Therefore, training has been identified as a potential solution to address a specific need and the steps taken during the TNA process can have a substantial impact on the effectiveness of the subsequent training program (Ferreira et al., 2015).

The first phase in Surface's (2012) process is the needs identification phase. This phase has multiple steps, such as identifying the initiating event and evaluating the quality of the initiating information, the value of addressing the need, and whether or not to advance to the next stage of specifying the need and continuing the TNA. The second phase of Surface's (2012) model is needs specification, during which a need is explicitly defined and detailed, additional information about the need is gathered (if necessary), possible explanations as to why the need exists and what can be done to address the need are discussed, and whether or not the TNA is approved. The third phase of Surface's (2012) process is the actual training needs assessment phase. At this point in the process, a need has been identified, specified, and the solution to address the need can be at least partially addressed with training. During this phase, traditional needs assessment activities are conducted, such as organizational, job/task, and person analysis (McGhee & Thayer, 1961, Kraiger & Cavanagh, 2014). After the TNA phase, Surface (2012) recommends advancing to an evaluation phase. The two main concerns associated with the evaluation phase are if the training program adequately developed the KSAOs of employees and if the improvement in employee KSAOs addressed the issue from the triggering event. The results of the evaluation phase provides evidence if the training needs were addressed, if a new

type of training is needed, or if the training worked and is no longer required. Additionally, the entire TNA process (all four phases) can be evaluated for effectiveness.

Surface's (2012) model made its biggest contribution to the TNA literature by offering a number of detailed steps that can serve as a guide for practitioners faced with some sort of initiating event. These detailed steps were then categorized into four phases (needs identification, needs specification, TNA, and TNA evaluation). Among these phases, the most novel are the two phases conducted before the actual TNA (needs identification and specification), which have come to be referred to as the "pre-assessment" phase. Previous TNA models gave little consideration to what needs to be done before actually conducting a TNA, which was a shortcoming because training is not always the best solution to address an organizational issue (Noe, 2008). The systematic pre-assessment phase introduced in Surface's model can provide information regarding whether or not a TNA should even be conducted, and if so, what special consideration should be given to the TNA, such as the sources (who provides the ratings) and targets (who is being rated) of TNA ratings.

Results from the current study will enhance the utility of the pre-assessment phase by providing practitioners with evidence based information regarding the measurement of training needs. This information can assist practitioners in creating a TNA, when they need to determine who will provide TNA ratings (source) and if the TNA rating source(s) will rate themselves, someone else, or both (target).

CHAPTER III
SOURCES AND TARGETS OF TNA RATINGS

Organizations typically rely on current employees and/or their supervisors to provide information about specific training needs during the person analysis phase of a TNA (Bibby, 2001; Noe, 2008). In a study surveying nearly 200 organizations regarding their TNA practices, Anderson and Johnson (2000) found that approximately 80% of the sampled organizations solicited TNA ratings from the trainee's supervisor and/or the trainee themselves. This is consistent with the belief that training needs can best be captured by simply asking people what training they themselves need or by asking people in what areas they perceive others to need training (Burton & Merrill, 1977).

Self-ratings are a key source of training needs information (McGhee & Thayer, 1961; Morano, 1973). TNA self-ratings refer to the ratings employees give themselves, regarding their own perceived need for training. Typically collected via interviews or questionnaires, self-ratings capture perceptions of what employees believe they need to learn to perform their job better (McGhee & Thayer, 1961). Therefore, McGhee and Thayer argue that self-ratings are advantageous to ratings from other sources partially because the employees themselves offer unique information as to what they believe they need training in. Ford and Noe (1987) echo this point, suggesting that employees currently performing the job should be aware of their own skills and deficiencies, making them best equipped to rate their own training needs. Additionally, McGhee and Thayer argue that the self-insight associated with assessing one's own need for training can be a motivating force for behavioral change. McEnery and McEnery (1987) support this notion by proposing that employees who have the opportunity to report their own need for training will be more motivated to participate in the subsequent training program.

The value of seeking input regarding an employee's performance and need for training from sources other than the focal employee is largely a result of the increasing interpersonal nature of the work environment (Ock, 2016). As employees interact with more coworkers throughout the day, it is logical to seek their input when evaluating an employee's current need for training. These ratings, which can be referred to as 'other' ratings, are made by individuals who are not the focal target of the ratings, but who have worked with or have knowledge of the work of the focal target (Campion, Campion, & Campion, 2015). Potential sources of other ratings include the employee's supervisor(s), subordinates, peers, and even customers outside the organization (Nowack & Mashihi, 2012). Part of the impetus for incorporating other sources to gather TNA ratings is that each different source of TNA ratings is suggested to provide unique information, meaningful in its own right (Fleenor, Taylor, & Chappelow, 2008). This rationale stems from the belief that the raters assessing the employees' training needs may have unique knowledge regarding their performance due to the different organizational roles they occupy.

The current study will examine two specific sources of TNA ratings: self-ratings, or the TNA ratings that employees give themselves, and other ratings, or the TNA ratings that employees ascribe to another employee. In addition to the two sources of TNA ratings, the current study will also examine the target of TNA ratings. In particular, two targets of needs ratings are of interest, the self and other. Self as the target of TNA ratings involves an employee rating their own training needs. Other as the target of TNA ratings involves an employee rating the training needs of another employee with whom they are familiar (e.g., supervisor rating their subordinates or subordinates rating their supervisor). Taken together, the purpose of this study is to examine how these different sources and targets of TNA ratings affect levels of TNA ratings.

DIFFERENCES IN TNA RATINGS BASED ON SOURCE

It is proposed that TNA ratings will vary by source such that self-ratings of training needs will be more lenient and on average indicate less of a need for training than TNA ratings of the same target ascribed by someone else. This is expected because self-ratings of training need are likely to be more effected by rater bias, resulting in an under reporting of training needs.

Theoretical rationale. Given the lack of theoretical work on the TNA process (Ferreira et al., 2015), it is warranted to refer to the much more extensive literature examining rating source effects in the performance appraisals literature (Heidemeier & Moser, 2009). Given that the purpose of a TNA is to identify performance gaps between current and desired states (Surface, 2012), there is significant similarity between assessing needs for training and current performance. However, the two contexts are not the same and it is important to note their dissimilarities. One of the main differences between performance appraisal and TNA ratings is the purpose the ratings serve. Although performance appraisals ratings can be used to identify training needs, it can also be used to make employment decisions such as who gets hired or fired (Cleveland, Murphy, and Williams, 1989). As a result, performance ratings can be full of potential positive and negative consequences (Cascio & Aguinis, 2011). Conversely, focusing exclusively on measuring training needs is less threatening because the purpose of collecting TNA ratings is to identify who needs training and in what areas they need to be trained (Tannenbaum & Yukl, 1992). Due to the potentially more significant consequences associated with decisions made from performance ratings than TNA ratings, there is a greater likelihood for performance ratings to be influenced by the political consequences of the ratings. In other words, raters have an opportunity to reward those they are close with and punish enemies or competitors (Cascio & Aguinis, 2011). Although TNA ratings can also suffer from political motives (Clarke,

2003), the incentive to provide politically motivated ratings is greater in performance appraisal than TNA because of the greater consequences associated with performance ratings.

Even though performance appraisal and TNA ratings differ in some respects, there are numerous similarities that provide confidence in the generalizability of the performance appraisal literature to the TNA context. First, the information obtained via a performance appraisal can not only be used for high-stakes purposes such as promotion or termination (Landy & Farr, 1980), but also used to identify employee training needs (Cleveland et al., 1989; Levine, 1986). Second, both performance appraisal and TNA ratings can be used to make administrative decisions, such as who gets a salary increase or who needs training. When ratings of either type (performance or training) are used for administrative purposes (making organizational decisions), raters are more susceptible to rating biases than when ratings are made strictly for research purposes (Landy & Farr, 1980). Furthermore, when ratings of any type are used to make administrative decisions, organizational politics and conflict can influence the ratings (Clarke, 2003). Clarke argues that "undertaking a TNA, where performance problems are identified by key staff groups…may well serve as another arena through which agendas are to be played out and sectional interests advanced" (p. 150). In summary, despite the noted differences, there is substantial overlap between performance and TNA ratings. Thus, previous research and theory regarding performance ratings is reasoned to be generalizable to the context of TNA ratings.

In the performance appraisal literature, it has been generally concluded that self-ratings of performance tend to be more lenient (favorable) than ratings from someone else, such as a peer or supervisor (Heidemeier & Moser, 2009). The assumptions of attribution theory offers an explanation as to why self-ratings suffer from significantly more leniency bias than ratings from other sources (Kelley & Michela, 1980). As summarized by Ross (1977), attribution theory is

"concerned with the attempts of ordinary people to understand the causes and implications of the events they witness" (p. 164). This attributional bias stems from individuals attributing desirable or socially acceptable outcomes to internal characteristics, such as personal skill, and attributing negative or socially unacceptable outcomes to external characteristics, such as conflicting work demands or a lack of organizational resources (Monson & Snyder, 1977). When employees make these types of attributions, it is considered a form of impression management, resulting in a leniency effect when rating their own performance (Heidemeier & Moser, 2009). This leniency effect, commonly referred to as a self-serving attributional bias, becomes evident by the inflation of one's own self-ratings of job performance in comparison to ratings from other sources, such as supervisors or peers (McEnery & McEnery, 1987). In efforts to enhance their own self-esteem, employees will be more likely to under report their performance deficiencies, portraying themselves as more competent in certain areas than in actuality. Therefore, when the data source of performance ratings is the employee themselves (i.e., self-ratings), there is potential for a self-serving attributional bias, resulting in performance ratings that indicate the employee is more proficient in some areas then they actually are (Facteau & Craig, 2001). In the context of assessing training needs, the result of a self-serving attributional bias can be training needs going undetected and therefore unaddressed (Thornton,1980).

In the organizational science literature, attribution theory has been proposed to play an important role in understanding the inferences employees make about the causes of behavior in the workplace and the associated organizational outcomes (Harvey, Madison, Martinko, Crook, & Crook, 2014). More specifically, attributions have been found to be extremely relevant for core industrial-organizational psychology topics such as impression management, performance appraisals, and training (Martinko et al., 2006). To a large extent, attribution theory is concerned

with the consequences of making attributions and the role those attributions play in understanding human behavior (Kelley & Michela, 1980).

In their seminal work, Jones and Nisbett (1972) proposed an actor – observer asymmetry, grounded in attribution theory, which sought to explain the different perceived causes of behavior between an actor and an observer. Briefly, the actor-observer asymmetry posits that when there are negative consequences associated with a behavior, the actor of that behavior will have a different perceived cause for the behavior and subsequent negative consequences than the observer watching the actor's behavior. Actors are much more likely to attribute the cause of these types of behaviors (with negative consequences) to situational requirements, such as conflicting work demands or insufficient organizational resources. In the words of Jones and Nisbett, "this tendency often stems in part from the actor's need to justify blameworthy action" (p. 80). On the other hand, observers are much less likely to attribute the negative outcomes of an actor's behavior to situational requirements. Instead, an observer will have a greater propensity to attribute the cause of an actor's behavior to dispositional characteristics of the actor, such as their skills and/or abilities. This is proposed to be the results of observers not being as motivated to protect their own self-esteem when rating the behaviors of actors as compared to the actor of the behavior rating themselves.

When making attributions, cognitive factors are likely to contribute to the different attributions made by actors and observers (Jones & Nisbett, 1972). Cognitive factors refer to differences in contextual information regarding behavior and how the behavior is perceived. Regarding cognitive factors, Kelley and Michela (1980) note that it is plausible for an observer to know little more about an actor than their behavior in a situation. In other words, an observer might not have any contextual information available to them about an actor's behavior, other

than the behavior they observe and the subsequent outcome of that behavior. Conversely, the actor has a much greater understanding of their own behavior and how it might be affected by the situational factors, as compared to the observer. This difference in available information can lead to different attributions. Kelley and Michela note that because of this discrepancy, the individual observing the behavior might be more likely to assume the behavior is consistent over time and situations, thus inferring the cause of the behavior to characteristics of the actor.

In addition to cognitive factors, motivational factors are also likely to contribute to the different attributions made by actors and observers (Jones & Nisbett, 1972). Motivational factors refer to the desire to preserve self-presentation. Kelley and Michela (1980) note that there is a tendency for an actor to be motivated to be recognized for desirable behaviors and avoid repercussion for undesirable behaviors. This results in a strong bias for actors to seek credit for positive outcomes and deflect blame for negative ones. Zuckerman (1979) acknowledges that a self-serving attributional bias is not the sole cause of differences in ratings, but is more effective in explaining differences than other alternatives.

Taken together, the cognitive and motivational factors underlying the actor-observer asymmetry provide a theoretical rationale for why TNA ratings of the same target are generally expected to differ based on source. When providing TNA ratings, the combination of available information (cognitive factors) and a self-serving bias to protect one's image (motivational factors) should contribute to TNA ratings indicating a lesser need for training when those ratings are gathered from the employee themselves than from a different employee.

In the context of the current study, identifying a training need is expected to be tantamount to acknowledging a performance deficiency (Surface, 2012), and thus will be susceptible to rating bias when employees are asked to identify their own training needs.

Attribution theory can be the lens through which to view differences in the TNA ratings ascribed by different raters. Based on the actor-observer asymmetry, it is expected that different sources of TNA ratings will formulate somewhat different attributions regarding the training needs of the employee being rated. More specifically, when TNA ratings are obtained via self-assessment, it could be surmised that employees will be more likely to use all available contextual information and attempt to protect their self-esteem by engaging in a self-serving bias to some extent. This increases the probability of employees attributing their deficiencies to non-trainable external factor, resonating as more lenient TNA ratings. Conversely, when employees rate the training needs of other employees, the rater (assuming the role of observer) will have access to much less contextual information and will be less motivated to engage in a self-serving bias because the TNA ratings are not a threat to themselves. The observer will be more likely to make internal attributions for the actor's behavior, attributing performance deficiencies to internal characteristics such as skills (Monson & Snyder, 1977). Theoretically, it is expected that self-assessed TNA ratings will display a lesser of a need for training as compared to the TNA ratings ascribed by someone else.

      Empirical rationale. To date, only three studies have explicitly examined how TNA ratings differ based on the source of the TNA ratings, by comparing employee self-ratings with ratings ascribed to them by their supervisor. The findings from these studies consistently demonstrated a propensity for employees to rate a lesser need for training than their supervisors' rated for them. Moreover, findings from these studies provide some support for the notion that employees demonstrate a self-serving attributional bias when rating their own need for training. One potential explanation is that employees are more likely to make external attributions for failures, whereas their managers are less likely to do the same. As a result, the TNA ratings

employees report for themselves exhibit greater leniency and illustrate greater competency in areas on the TNA than compared to their supervisors' perceptions.

In one study, Arnold & Davey (1992) examined self and supervisor self-reported ratings of training needs on 27 different competency items reflecting skills and knowledge required for job performance. Using a sample of 784 recent graduates and 531 managers of recent graduates working in one of eight organizations based in the United Kingdom, the authors were interested in the difference between recent graduates' ratings of their own competencies and managers' ratings of recent graduates' competencies. The higher a competency was rated, the less it was considered a training need. The authors found that recent graduates generally rated themselves higher than their managers in each of the 27 competency items, suggesting that graduates' self-ratings were more lenient than the ratings ascribed to them by their managers.

In another study, McEnery and McEnery (1987) collected ratings of training needs from 200 managers and their subordinates within the United States health care industry. A training need was operationalized as the difference between desired performance and actual performance. Subordinates provided ratings of their own current and desired performance, whereas supervisors provided ratings of their subordinates. If actual performance was rated lower than desired performance, then a need for training existed. The authors found that a lower percentage of subordinates identified the existence of a need than did the supervisors in 25 of the 29 performance dimensions.

In a third study, Staley and Shockley – Zalabak (1986) examined the difference in present proficiency and future training needs among a sample of 122 female professionals and 80 of their direct supervisors within private industry and governmental agencies. Among the 15 training areas, supervisor and subordinate ratings were significantly and positively correlated in only four

areas. On average, the female professionals rated themselves higher in 12 of the 15 communication competency areas than did their supervisors, suggesting self-ratings were more lenient than ratings from a supervisor.

Although only three studies have examined the effect of TNA source on TNA ratings, considerably more research has examined the effects of rating source in terms of performance appraisals (Iqbal, Akbar, Budhwar, 2015). As noted by Facteau and Craig (2001), perhaps the most consistent finding in the performance appraisal empirical literature is that ratings from different sources generally do not converge. In the often-cited meta-analysis by Harris and Schaubroeck (1988), self and supervisor ratings of job performance were only moderately correlated ($r = .35$) and self-ratings averaged .70 standard deviations higher than supervisor ratings. Similarly, the meta-analysis by Conway and Huffcut (1997) found a weak relationship between self and supervisor ratings of job performance ($r = .22$). More recent meta-analytic data provide further support for the divergence of self and supervisor performance ratings by reporting self-ratings to be an average of .33 standard deviations higher than supervisory ratings (Heidemeier & Moser, 2009).

Hypotheses. Given the above theoretical justifications and empirical findings, self-ratings of perceived training needs are expected to be on average lower than the ratings of perceived training needs ascribed by others. More specifically, TNA self-ratings of employees in both supervisory and non-supervisory positions will be more susceptible to self-serving attributional bias and thus will indicate lower training needs compared to ratings from others (i.e., non-supervisors and supervisors, respectively). In the context of the current study, an employee's job position (as a supervisor or non-supervisor) will be used to differentiate ratings between sources. Therefore, the following hypotheses are posited:

Hypothesis 1a: Employees in supervisory positions will rate their own training needs lower compared to how employees in non-supervisory positions will rate supervisors' training needs.

Hypothesis 1b: Employees in non-supervisory positions will rate their own training needs lower compared to how employees in supervisory positions will rate non-supervisors' training needs.

DIFFERENCES IN TNA RATINGS BASED ON TARGET

In addition to the expected effect of source on TNA ratings, it is also hypothesized that the target of TNA ratings will have an effect on the reporting of perceived needs. Individuals are expected to rate the training needs of someone else greater than they do for themselves. This effect is expected in large part due to the propensity for self-ratings to be subject to a self-serving bias. As a result, when individuals rate their own training needs, they will be more likely to make external attributes regarding performance deficiencies that require training. In other words, gaps between current and desired performance are more likely to be attributed to untrainable factors outside of the employee's control. Conversely, when individuals rate the training needs of someone else, they will be more likely to make internal attributes regarding any performance deficiencies requiring training. In other words, gaps between current and desired performance are more likely to be attributed to the stable personal characteristics of someone else, which can be trained. This is an opportunity for individuals to protect their self-esteem, by under reporting their own training needs. It is predicted that TNA ratings will be more lenient and indicate a lesser need for training when the target of the TNA ratings is oneself as compared to when the target of TNA ratings is someone else.

Theoretical rationale. The assumptions of attribution theory and the actor-observer asymmetry proposed by Jones and Nisbett (1972) also provides a theoretical rationale as to why TNA ratings from the same source are expected to differ based on the target of the TNA ratings. It should be noted that there is a degree of similarity between examining differences in TNA ratings based on the source and target of the TNA ratings. Both deal with making comparisons between different groups of TNA ratings and the associated attributional biases. However, when examining the effect of the target of TNA ratings, the source of the TNA ratings remains the same, but the target (or who is being rated) is different. Despite the slight difference in source and target effects, the theoretical justification as to why differences in TNA ratings exist still holds true. For that reason, many of the theoretical arguments proposed for source effects will be used to explain why the target of TNA ratings is expected to have an effect on TNA ratings, beyond a true differences in competencies.

As previously stated, attribution theory is predominantly concerned with the attributions people make in understanding human behavior. In short, an actor of a behavior is more likely than an observer of that behavior to make internal attributes regarding the cause of a behavior when the outcome of that behavior is positive, and external attributions when the outcome is negative (Monson & Snyder, 1977). The differences in attributions stem from the different contextual information available to actors and observers regarding the behavior (cognitive factors). Furthermore, employees are more motivated by self-presentation when rating their own training needs than when rating the training needs of someone else (motivational factors). Together, these cognitive and motivational factors will contribute to differences in TNA ratings on independent targets (the self and someone else) from the same source, similar to the effect that different sources of TNA ratings can have on TNA ratings.

Jones and Nisbett (1972) argue that the contextual data available to an actor associated with a given behavior is typically very different than the contextual data available to an observer. When that target of the TNA ratings changes from oneself to someone else, the rater will have much less contextual information regarding the observer's behavior than they do for their own behavior. According to Jones and Nisbett, when the outcome of an actor's behavior is negative or undesirable, then the actor is more likely (than the observer) to use the contextual information available to them and attribute the cause of their behavior to external factors beyond their individual competencies. On the other hand, the observer has access to much less contextual information about the behavior and will be less likely to make external attributions due in part to the limited contextual data available to them. The potential for a rater to make different attributions regarding the cause of their own and someone else's behavior can manifest in different TNA ratings. This is because the observer more so than the actor is likely to attribute performance deficiencies to internal characteristics than can be trained versus external characteristics that are untrainable. Furthermore, individuals have a propensity to evaluate the attributions they make as accurate portals of what they see, versus one of potentially multiple interpretations (Jones & Nisbett, 1972). This suggests that once a rater uses the contextual information available to them to make attributions regarding their own or someone else's behavior, they are likely to evaluate those attributions as truth versus one potential explanation. Based on the available contextual information and the certainty with which individuals view their attributions, it is expected that TNA ratings from the same source, but on different targets, will differ significantly, beyond simple disparities in competencies.

Regarding motivational factors, differences in TNA ratings between the ratings an employee gives themselves and then ascribes to someone else are also due in part to the actor's

motivation to enhance their self-image (Kelley & Michela, 1980). Individuals are expected to be motivated to present themselves in a favorable way, and a TNA is an opportunity to do so. Therefore, individuals will likely underreport their own need for training in comparison to the TNA ratings they ascribe to others, as a result of these motivational factors. As Kelley and Michela (1980) note, an actor's undesirable behavior can have a negative impact on one's self-regard. The actor then, being motivated to protect their self-regard, becomes more likely to attribute the cause of their behavior to external factors that do not pose a direct threat to themselves. Conversely, positive behavior can potentially enhance an actor's self-esteem, thus making it more likely for actors to attribute the cause of positive behaviors to their internal characteristics. Taken together, actors' self-ratings of their training need will be motivated more by self-enhancement and self-preservation as compared to the TNA ratings they ascribe to someone else when assuming the role as observer. When the target of the TNA ratings switches from oneself to someone else, the motivation for self-enhancement is diminished because rating the training needs of someone else poses little threat to oneself.

In the context of the current study, attribution theory is useful in understand differences in TNA ratings ascribed to different targets from the same source. It is expected that TNA ratings will suffer from more bias when an employee is rating their own training needs versus the training needs of someone else. Based on the actor-observer asymmetry, it is surmised that as a rater's role switches from actor to observer, they will make different attributions regarding the training needs of the target being rated. Similar to the effect of source on TNA ratings, when employees rate their own training needs via self-assessment, they will have the opportunity to, and be more likely to use all available contextual information in an attempt to protect their self-esteem by engaging in a self-serving bias and attribute their deficiencies to non-trainable,

external factor. Conversely, when that same employee then assumes the role of observer and provides TNA ratings for another employee, they will have much less contextual information and be less motivated to engage in a self-serving bias, since the TNA ratings are not a threat to themselves. Therefore, it is proposed that TNA ratings will differ based on the target of the TNA ratings (the self or someone else) due in large part to the different roles of actor and observe assumed by the rater, each eliciting different attributions regarding the cause of behaviors related to TNA ratings.

Empirical rationale. It is proposed that the TNA ratings an individual ascribes to themselves will systematically differ from the TNA ratings they ascribe to someone else. This is because of the different attributional biases associated with the different roles of being an actor or observer. Previous studies have tested the effects of attribution theory in a variety of settings. In general, the findings from these studies provide evidence for a self-serving bias, such that the outcome of an individual's behavior effects how they perceive the cause of their behavior. Recent research has found evidence of a self-serving bias resulting in an actor attributing positive outcomes to internal characteristics, but negative outcomes to external characteristics (Korn, Rosenblau, Rodriguez, Buritica & Heekeren, 2016). The experimental study by Korn and colleagues instructed participants to complete a novel task, and then tested how their evaluations of the task stimuli changed in response to positive and/or negative feedback about their performance on the task. The results of the study were in line with the predictions made by attribution theory. Participants' perception of the experimental task stimuli changed based on the feedback they received from the researchers. According to Korn and colleagues, how participants evaluated the stimuli was contingent on the type of feedback they received. Stimuli were perceived more positively after positive feedback and more negatively after negative feedback.

By adjusting the perceived credibility of the task stimuli based on the feedback they received, participants exhibited a self-serving positivity bias.

A number of older studies (e.g., Lay, Burron, & Jackson, 1973; Lenauer, Sameth, & Shaver, 1976; Nisbett, Caputo, Legant, & Marecek, 1973) noted by Kelley and Michela (1980) have also provided support for the general notion that actors make more external attributions and observers make more internal attributions. For example, in the third study from Nisbett and colleagues (1973), there was a significant correlation between trait attributions and the length of time the participant had been friends with an individual. This supports that idea that the target of ratings has an effect on the ratings, such that the more familiar the rater is with the target of ratings, the more likely they are to make external attributions regarding the cause of an undesirable behavior. Another study conducted by Snyder, Stephan, and Rosenfield (1976) sought to test the attributional tendency of egotism, or the desire to make attributions that enhance one's self perception. Results of the experimental study revealed clear instances of egotism, or a self-serving bias, whether the outcome in question was good or bad. More specifically, when participants lost a competition, they were more likely to minmize the requisite skill of the task and emphasize luck. Conversely, when the actor won, they were more likely to attribute their success on the task to skill.

The meta-analysis by Mezulis, Abramson, Hyde, and Hankin (2004) comprehensively reviewed the literature on self-serving attributional bias. The purpose of the meta-analysis was to evaluate the extent of the self-serving attributional bias across a variety of settings and cultures by examining a total of 266 studies with 503 independent effect sizes. The authors found strong support for the notion that a self-serving attributional bias is a widespread feature of human behavior ($d = 0.96$). Furthermore, the authors found a greater magnitude of the self-serving

attributional bias in the United States versus other cultures. In summary, the authors concluded that "most people, most of the time, do attribute their successes to enduring, pervasive characteristics about themselves and discount their failures as unrelated to any enduring, pervasive personal characteristics" (p. 738).

Taken together, the studies reviewed above all provide support for the assumptions of attribution theory ranging across time and cultures. These studies highlight the conflicting attributions between an actor and observer, and the tendency for individuals to accept credit when the outcome is desirable and deflect blame when the outcome is not. More specifically, individuals have a propensity to attribute good performance to internal characteristics (skill) and poor performance to external factors, such as the task itself. Additionally, familiarity with the target of ratings was shown to affect ratings themselves, such that the more contextual data an observer has about an actor, they less likely they are to attribute the cause of poor performance to internal characteristics.

In the context of the current study, employees rating their own training needs are likely to be more motivated to preserve their self-image than they are when rating the training needs of someone else. To preserve their self-image, raters are expected to use the available contextual information to attribute performance deficiencies requiring training to external factors, which cannot be trained. In other words, employees will be more likely to perceive their training needs as the result of external factors outside of their control and subsequently, likely to underreport their need for training. On the other hand, employees will be more likely to take credit for successful outcomes. Although a training need might exist, if the employee has been successful in the past due to factors outside of their control (e.g., luck or circumstance), they will be more likely to internalize that outcome and view it as the result of their own skills. In either case

(external or internal attributes), this could manifest as an underreporting of self-assessed TNA ratings. When asked to provide TNA ratings for someone else, the rater will be less motivated to underreport the training needs because the ratings do not directly affect themselves. Additionally, the observer will have access to less contextual information needed to make external attributions. As previously noted, it is expected that TNA ratings from the same source, but on different targets, will differ significantly, beyond simple disparities in competencies Together, this is expected to result in employees ascribing significantly higher TNA ratings to someone else than themselves.

Hypotheses. Given the above theoretical justifications and empirical findings, the TNA ratings an individual ascribes to someone else are expected to be on average higher than the TNA ratings they ascribe to themselves. These differences in TNA ratings based on the target of the ratings are expected to exist for employees in both supervisory and non-supervisory positions. In the context of the current study, an employee's job position (as a supervisor or non-supervisor) will be used to differentiate ratings between targets. The following hypotheses are posited:

Hypothesis 2a: Employees in supervisory positions will rate the training needs of non-supervisors higher compared to how they will rate their own training needs.

Hypothesis 2b: Employees in non-supervisory positions will rate the training needs of supervisors higher compared to how they will rate their own training needs.

CHAPTER IV

VALIDATION OF TNA RATINGS

The secondary purpose of this study is to determine if TNA ratings accurately reflect relevant training needs. Stated differently, are the ratings of training need collected by a TNA valid representations of an employee's relevant training needs? This study will seek to provide evidence for the validity of TNA ratings based on the job position of the employees providing TNA ratings for themselves. The validity of the resultant TNA ratings will be determined by the extent to which employees' TNA ratings reflect the competencies required by them in their position as a supervisor or non-supervisor. To date, there is little evidence about the validity of the TNA ratings collected as part of a TNA (Ferreira et al., 2015). As far as the author is aware, this study will be the first of its kind to link employee TNA ratings to the requirements of their job as a supervisor or non-supervisor.

Validity is defined by the American Educational Research Association and other groups in the Standards for Educational and Psychological Testing (2014) as "the degree to which evidence and theory support the interpretations of test scores entailed by proposed uses of tests" (p. 9). Like other psychological assessments, interpretations of TNA results should be valid to the extent that these results represent relevant needs for training based on an employee's job position and its associated competencies. A key source of validity evidence, known as content validity, is based on the relationship between the content of a test and the construct the test intends to measure (American Educational Research Association et al., 2014). Alternatively, Haynes, Richard, and Kubany (1995) define content validity as the degree to which a measurement instrument is representative of the intended construct for a specific assessment

purpose. An assessment is understood to have content validity if the measurement items are deemed relevant and appropriate in measuring the intended construct.

In the context of the current study, a TNA is intended to measure job relevant training needs of a given employee by asking employees to indicate how much their job performance would improve if they completed training on numerous competency items. The purpose of the TNA is to capture training needs that if satisfied, would be perceived by the employee to improve their performance. This study seeks to evaluate the content validity of TNA ratings by examining the relationships between self-assessed TNA ratings and employees' formal job positions (as a supervisor or non-supervisor). It is proposed that employees who are in supervisory positions will provide higher TNA ratings on competencies related to their work responsibilities as a supervisor than will non-supervisors. The main objective of this part of the study is to content validate the TNA ratings resulting from a TNA based on job position and the associated requirements.

DIFFERENCES IN TNA RATINGS BASED ON JOB POSITION

It is expected that employees will provide different levels of TNA ratings based on their job position as a supervisor or non-supervisor. More specifically, supervisors should report a greater need for training on competencies relevant to their job requirements as supervisors than non-supervisors. This difference is expected due to the different competencies required of employees for effective performance in different positions. Competencies refer to an array of characteristics, behaviors and traits essential for effective performance on the job (Abraham, Karns, Shaw, & Mena, 2001). According to Abraham and colleagues, competencies are advantages because they include the characteristics, behaviors, and traits required for successful job performance, without having to distinguish between them. However, not all job positions

require the same competencies. For example, success at an entry level position is not necessarily predictive of managerial success because of the different competencies required for successful performance between the two positions (Cascio & Aguinis, 2011). Furthermore, successful performance even at different managerial levels might require different competencies (Fondas, 1992).

Theoretical rationale. Different job positions have different responsibilities associated with them (Dierdorff, Rubin, & Morgeson, 2009). According to organizational role theory, these differences have been attributed to the different expectations that employees inherit when they assume different roles (Biddle, 1986). In other words, a work role can be viewed in terms of the requirements and responsibilities corresponding to a specific job (Ilgen & Hollenbeck, 1991). When employees accept a role within an organization as either a supervisor or non-supervisor, they are also accepting the demands of that role (Katz & Kahn, 1978). In the context of the current study, the assumptions of organizational role theory suggest that TNA ratings of employees in supervisory positions will differ from the TNA ratings of employees in a non-supervisory positions, as a result of the different requirements in their distinct job roles.

Managerial competencies. According to Dierdorff and colleagues (2009), managerial work roles involve the numerous characteristics and activities associated with managerial occupations. Previous taxonomic research has highlighted the various requirements for effective supervisor performance. Among these is the popular taxonomy constructed by Borman and Brush (1993), consisting of 18 mega-dimension representing 187 facets of managerial performance. These 18 mega-dimensions of managerial performance include competencies such as planning and organizing, guiding, directing, motivating subordinates, and maintaining good working relationships. A complete list of all 18 mega-dimensions can be found in Appendix A.

These mega dimensions were constructed based on the findings of numerous empirical studies across a wide range of sample jobs and organizations, as well as input from a number of subject matter experts. The 18 mega-dimensions of managerial performance represent the broad competencies required for effective managerial performance across a range of contexts.

More recently, Bartram (2005) introduced a set of managerial competencies known as the Great Eight. The Great Eight competency factors are eight broad competencies representing 112 specific competencies that emerged from analyses of workplace performance ratings. Bartram's goal was to categorize the different aspects of managerial performance to better understand its predictors. For the purposes of the current study, the Great Eight competencies are a useful taxonomy to understand the job requirements of managers. These eight competencies are: leading and deciding, supporting and cooperating, interacting and presenting, analyzing and interpreting, creating and conceptualizing, organizing and executing, adapting and coping, and enterprising and performing. The Great Eight competency model was constructed via detailed analysis of numerous published and practitioner oriented competency models. As a result, the Great Eight can be viewed as a parsimonious synthesis of previous competency models of managerial performance. Appendix B depicts the similarities and overlap between the 18 mega-dimension of managerial performance from Borman and Brush (1993) and the Great Eight competency model from Bartram.

In summary, the fundamental principal of organizational role theory (Biddle, 1986) suggests that different work roles entail different responsibilities and requirements. The taxonomies of managerial competencies reviewed above highlight the role requirements of managers. In the context of the current study, the managerial competencies taxonomy will be used to content validate the TNA ratings obtained via a TNA by linking TNA ratings to the

responsibilities and requirements of employees' who occupy managerial job roles. The distinction between managers and non-mangers is important because of the different competencies associated with successful performance between the two positions (Casico & Auginis, 2011). This difference in required competencies should resonate in different TNA ratings, such that employees who identify as a supervisor will have higher TNA ratings on competencies on the TNA most closely associated with their role as a supervisor.

Empirical rationale. Different empirical studies have tested the utility of different employee competency taxonomies. Regarding managerial competencies, Abraham and colleagues (2001) surveyed senior human resource professionals at 277 different organizations regarding their use of 23 managerial competencies as part of their managerial appraisal programs. Abraham and colleagues were interested in which managerial competencies were most frequently used in evaluating the performance of managers. Their analyses revealed six variables representing the most critical managerial competencies, including: leadership skills, customer focus, results oriented, problem solver, communication skills, and team worker. Abraham and colleagues note that the six managerial competencies revealed in their analysis are consistent with what previous managerial competency models have concluded are required for effective managerial performance.

Similarly, Shirazi and Mortazavi (2009) in their review of the management literature highlighted several managerial competencies which have been found to correlate with effective managerial performance. These competencies are: analytical thinking, conceptualization, concern with impact, proactivity, achievement-orientation, communication, team-building, and self-confidence. The competencies that Shirazi and Mortazavi found to correlate with managerial performance are similar to the competencies required to be an effective manager reviewed in a

different meta-analysis by Bhardwaj and Punia (2013). Taken together, the similarity in findings among empirical reviews suggest some consensus regarding the competencies required by managers for effective performance, albeit in the form of different models.

In summary, these empirical studies support the theoretical managerial competency models, providing support for its utility in determining the validity of TNA ratings obtained via a TNA. The Great Eight managerial competency model introduced by Bartram (2005) is an appropriate taxonomy of managerial performance, representative of the competencies of successful managers (Abraham et al., 2001).

Hypothesis. Table 2 depicts the 14 competencies from the TNA are expected to be most relevant to supervisors. Appendix C details which competencies from the TNA are most relevant to the competencies from the Great Eight managerial taxonomy outlined by Bartram (2005), with definitions for the items from each taxonomy.

Table 2

Hypothesized Supervisor-Specific Training Needs Assessment (TNA) Competencies

Supervisor-Specific Competencies from the TNA	
1. Bullying & Workplace Harassment	8. Managing Accountability
2. Contract Management	9. Managing Change
3. Dealing with Conflict	10. Negotiation Skills
4. Diversity / Cultural Awareness	11. Organizational mission, vision, and values
5. Goal-Setting	12. Project Management Skills
6. Human Resource Policies & Procedures	13. Supervisory Skills
7. Leadership Skills	14. Team Building Skills

For the current study, the Great Eight competencies used in Bartram's (2005) study will be used as the reference for determining which competencies from the TNA are most relevant to managers. This decision was made for the following reasons. First, there is considerable overlap

between each of the aforementioned managerial competency models, as noted in the reviewed literature. Second, the Great Eight competencies are seemingly a fair balance between detail and generalizability. As Bartram explains, the Great Eight competencies are specific enough to differentiate between one another, but broad and general enough to be applied in a wide range of studies. Finally, the author and his colleagues reviewed a wide range of published and unpublished studies to develop this generic competency framework in conjunction with subject matter experts. It is expected that supervisors will rate a greater need for training than non-supervisors on competencies relevant to the job requirements of supervisors, as outlined in Bartram's Great Eight competency model. The following hypothesis is posited:

Hypothesis 3: Employees in supervisory positions will rate their training needs on supervisor-specific competencies higher compared to how employees in non-supervisory positions will rate their training needs on supervisor-specific competencies.

CHAPTER V

METHOD

PARTICIPANTS

This study will use archival data from a needs assessment project in 2015. More specifically, 1,493 employees from a city municipality on the East Coast, representing 34 of 37 total departments, participated in the project. To ensure anonymity, demographic data (e.g., sex, age, race) were not collected from participants. This is a typical approach to not only ensure the anonymity of responses, but also to improve the accuracy of measuring training needs (Ford & Noe, 1987).

A total of 1,271 participants provided data regarding their job position (supervisor or non-supervisor) and will serve as the overall sample in this study because the proposed hypotheses rely on participants providing this grouping information. A majority of the participants identified as non-supervisors ($n = 858$; 67.5%), whereas nearly a third of the participants identified as supervisors ($n = 413$; 32.5%). Most of the city employees reported being employed on a full-time basis ($n = 1,131$; 89.0%), whereas 10% ($n = 127$) reported being employed part-time and about 1% ($n = 13$) of respondents did not provide a response. On average, participants worked in the municipality for 14 years. The plurality of respondents ($n = 289$; 22.74%) were employed by the municipality for zero to four years, 18% ($n = 229$) of respondents were employed for five to nine years, and 16.5% ($n = 210$) were employed for 10 to 14 years.

A total of 1,246 participants identified the department within the city municipality in which they worked (Appendix D). Of note, the five most represented departments were: Parks and Recreation ($n = 222$; 17.47%), Public Works ($n = 211$; 16.60%), Human Services ($n = 197$;

15.50%), Public Utilities (*n* = 102; 8.03%), and Public Library (*n* = 100; 7.87%). Table 3

illustrates the breakdown of supervisors and non-supervisors within each of the five most

represented departments.

Table 3

Most Represented Municipality Departments

Departments	Number of Participants	Percentage of Total Responses
Human Services	197 (137/60)	15.5%
Parks and Recreation	222 (100/122)	17.5%
Public Libraries	100 (78/22)	7.9%
Public Utilities	102 (75/27)	8.0%
Public Works	211 (172/39)	16.6%

Note. The total number of participants from each department is presented above the parentheses in the column titled, 'Number of Participants.' The first number in the parentheses represents the number of non-supervisors, and the second number represents the number of supervisors.

PROCEDURE

As mentioned earlier, the archival data for this study were obtained as part of a needs

assessment project of a municipality on the East Coast for the purpose of providing their HR

department with training and development recommendations. The organizational representatives

gave their approval for use of the data for future theses, papers, and presentations. This research

study was also determined to be exempt from Institutional Review Board (IRB) review by Old

Dominion University Sciences Human Subjects Review Committee. To date, none of the

variables of interest to the current study and no findings drawn from the data have been published in any academic or practitioner journals or used as part of a master's thesis or dissertation.

The archival data set was obtained via two identical forms of a TNA survey (paper and online) designed to optimize data collection. The TNA survey was completely anonymous and no personal identifying information was collected. There were a total of 24 questions on the TNA survey, comprising nearly 100 individual items. One question specifically captured self-assessed training needs, with 22 items representing 22 different competencies. Two other questions asked participants to rate the training needs of either their supervisor (if previously identified as non-supervisor) or their subordinates (if previously identified as supervisor) on the same 22 competency items they rated their own training needs. Consequently, given this study's aims, only a portion of the data obtained via the TNA will be used for this study. Specifically, data regarding TNA ratings (self-ascribed and ascribed by someone else), job position and selected control variables will be used as detailed below.

From April 3rd, 2015 to April 6th, 2015, approximately 1,500 hard copies of the survey were distributed by the municipality's human resource department to full-time and part-time employees with limited or no access to email. Participants completed the paper survey during their work day, at a time convenient to them. On April 6th, 2015, a website link to the online version of the survey was distributed to approximately 5,500 full-time and part-time city employees via email by members of the city human resource department. Reminder emails that included the survey link were sent out on April 15th, 2015, and on April 21st, 2015. A final email reminder was sent on April 23rd, 2015 to announce the closing of the survey. A total of approximately 7,000 members were invited to participate in the study.

Over the course of three weeks, a total of 308 paper surveys (20.5% response rate) and

1,185 online surveys (approximate 16.9% response rate) were submitted. In total, completed

surveys were collected from 1,493 participants. Among the 1,271 participants who indicated

their job position (overall sample to be used in this study), 279 were paper respondents and 992

were online respondents. To improve response rate, participants were allowed to complete the

TNA survey during the work day, but did not receive any compensation for their participation.

Participants were informed by a cover letter (Appendix E) accompanying the survey that their

responses would be kept anonymous and would be used solely to design training programs to

best address their needs. The online survey was hosted on Qualtrics by Old Dominion University

researchers who collected and stored all online data. The paper surveys were collected by Human

Resource Department employees within the municipality who handed them over to the university

researchers for analyses.

MEASURES

   Training needs. As noted by Holten, Bates, and Naquin (2000), there are multiple

approaches to measuring training needs. This study adopted a methodology referred to as large-

scale performance-driven training needs assessment (Holton et al., 2000). This particular

methodology follows the discrepancy model of needs assessment, which aims to identify gaps

between what is and what should be based on the organization's valued goals (Kaufman, 1987).

To identify the aforementioned gaps, top leaders, subject matter experts, and employees were all

used to determine the scope and content of the needs assessment measure (Holton et al., 2000).

   Training needs were assessed by 22 items assessing 22 different competencies previously

identified by city employees as critical for effective job performance. These are listed in

Appendix F. Examples of competency items include: basic computer skills, dealing with conflict,

goal setting, leadership skills, managing change, presentation skills, supervisory skills, and team building skills. As noted above, these 22 competencies were identified in a previous study conducted by the city's Human Resource Department. The committee also researched and reviewed sample TNA measures and pilot tested the identified competency items using a group of 21 members from various departments.

Adopting the procedure used by Holton et al. (2000), participants in this study provided self-ratings by rating the degree to which they believed that their own performance would improve if they received training on each competency on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*a great deal*). Participants also provided 'other' ratings by endorsing the degree to which they believed the performance of their supervisor (if non-supervisor) or their subordinates (if supervisor) would improve if they received training on each competency. 'Other' ratings were made on the same 5-point Likert scale as self-ratings, ranging from 1 (*not at all*) to 5 (*a great deal*). In this study, the 'other' ratings refer to the ratings of perceived training need that supervisors or non-supervisors ascribe to someone other than themselves. Supervisors' 'other' ratings refer to the perceived training needs of non-supervisors, whereas non-supervisor 'other' ratings refer to the perceived training needs of their supervisor. These operational definitions of 'self' and 'other' ratings hold true when examining the effect of source and target on TNA ratings.

It is important to note that in order to ensure anonymity and improve the likelihood of capturing true training needs, direct supervisor-subordinate dyads were not recorded. Although this information would have permitted direct comparisons of TNA ratings between supervisors and non-supervisors, the threat of providing identifying information could have invalidated any findings. For example, if an employee knew their supervisor would be able to identify their TNA

(and TNA ratings), it is possible they would provide little insight into their true needs for training. The same could be true for supervisors, who might dramatically under-report their need for training in order not to project incompetence to their subordinates or upper management. To address this potential limitation, participants were instructed to make 'other' ratings of their direct supervisors (if non-supervisor) or their direct subordinates (if supervisor). As a result, these data allows for comparisons of TNA ratings between job positions within the same department, while also ensuring anonymity and increasing the likelihood of capturing accurate TNA ratings.

Job position and department. Job position was measured by one item, which asked participants to "please select your job category." Response options were non-supervisor or supervisor. Job department was measured by one item, which asked participants to "please select your department." Response options were 37 different departments, as provided by the municipality's HR department.

SUMMARY OF HYPOTHESES

A summary of the three hypotheses (1a, 1b, 2a, 2b, 3) proposed in the current study is presented in Table 4. For all hypotheses, the dependent variable were TNA ratings. For the first two sets of hypotheses (1a, 1b and 2a, 2b), the independent variables of interest were source of TNA ratings and target of TNA ratings. For hypotheses 3, the independent variable of interest was job position (supervisor or non-supervisor).

Table 4

Review of Hypotheses: Comparing Training Needs Assessment (TNA) Ratings between Groups by Source, Target, and Job Position

Source of TNA Ratings	Target of TNA Ratings	
	Self	Other
Supervisor	1	2
Non-supervisors	3	4

Note. Hypothesis 1a compares groups 1 and 4; Hypothesis 1b compares groups 3 and 2; Hypothesis 2a compares groups 1 and 2; Hypothesis 2b compares groups 3 and 4; Hypothesis 3 compares groups 1 and 3.

Hypotheses 1a and 1b concerns the source of TNA ratings, which has two levels (supervisor or non-supervisor). Source refers to who is providing the actual TNA ratings and will be tested by comparing the ratings made on the same target by different sources. Specifically, comparing the self-ratings of training needs that supervisors ascribe to themselves (1) with the 'other' ratings that non-supervisors ascribe to their supervisors (4), and comparing the self-ratings that non-supervisors ascribe to themselves (3) with the 'other' ratings that supervisors ascribe to non-supervisors (2).

Hypotheses 2a and 2b concern the target of the TNA ratings, which also has two levels (self and other). Target refers to the focal point of the TNA ratings, or who the TNA ratings of are intended for. The effect of target on TNA ratings was examined by comparing the ratings that the same individual gives to themselves and then ascribes to someone else. Specifically, supervisors' self-ratings (1) of training needs were compared with the ratings they ascribed to non-supervisors (2), and non-supervisors' self-ratings (3) were compared with the ratings they ascribed to supervisors (4).

Hypotheses 3 predicted that self-ratings of training needs would reflect relevant aspects of an employee's job position. It was predicted that self-ratings of training needs would differ

between supervisors and non-supervisors such that supervisors would provide higher TNA ratings than non-supervisors on competencies relevant to supervisory performance. To test this hypothesis, self-ratings of training need were compared between supervisors (1) and non-supervisors (3).

CHAPTER VI

RESULTS

PRELIMINARY ANALYSES

Missing data. Missing data were examined with frequency distributions that indicated
that not all the participants completed all the items measuring training needs. In total, 1,271
participants provided data regarding their job position (413 supervisors and 858 non-
supervisors). Among the 413 supervisors, all provided at least partial ratings of self-assessed
training needs and 21 participants did not provide any ratings of training needs for their
subordinates. Among the 858 non-supervisors, 6 participants did not provide any ratings of self-
assessed training needs, and 66 participants did not provide any ratings of training needs for their
supervisors. Participants who did not respond to any of the TNA items for themselves or their
subordinate / supervisor were removed from that analysis. Table 5 details the sample size in each
group of training need ratings after removing complete non-respondents.

Table 5

*Sample Size for Each Group of Training Need Ratings and Number of Completely Missing
Data*

	Completely Missing	Number of Participants
Supervisor Self Ratings	0	413
Supervisor Other Ratings	21	392
Non-Supervisor Self Ratings	6	852
Non-Supervisor Other Ratings	66	792

The rest of the data among the four groups for each competency item was missing less
than five percent of the data (Table 6). When missing data are less than five percent, the chosen
strategy for dealing with missing data (e.g., pairwise or list wise deletion) is unlikely to affect
overall results (Cohen, Cohen, West, & Aiken, 2003). Therefore, the decision was made to

exclude participants with missing data listwise in order to maintain consistent sample sizes within each analysis across each of the competency items.

Table 6

Missing Data for Each Group of Training Need Ratings for Each TNA Competency Item

TNA Competency	Supervisor Ratings of Self (*n* = 413)		Supervisor Ratings of Non-Supervisors [a] (*n* = 392)		Non-Supervisor Ratings of Self [b] (*n* = 852)		Non-Supervisor Ratings of Supervisors [c] (*n* = 792)	
	# of Missing Data	% of Missing Data	# of Missing Data	% of Missing Data	# of Missing Data	% of Missing Data	# of Missing Data	% of Missing Data
Basic Computer Skills	1	0.24%	3	0.77%	13	1.52%	12	1.54%
Bullying & Workplace Harassment	6	1.45%	3	0.77%	19	2.21%	20	2.59%
Contract Management	6	1.45%	2	0.51%	21	2.45%	26	3.39%
Communication Skills	5	1.21%	0	0.00%	23	2.68%	21	2.72%
Critical Conversations	8	1.94%	2	0.51%	22	2.56%	19	2.46%
Customer Service	5	1.21%	3	0.77%	12	1.40%	20	2.59%
Diversity / Cultural Awareness	6	1.45%	2	0.51%	19	2.21%	22	2.86%
Dealing with Conflict	5	1.21%	2	0.51%	18	2.10%	17	2.19%
Goal Setting	6	1.45%	1	0.26%	19	2.21%	24	3.13%
Handling Angry / Upset Customers	8	1.94%	2	0.51%	20	2.33%	25	3.26%
Human Resources Policies & Procedures	8	1.94%	2	0.51%	16	1.86%	21	2.72%
Leadership Skills	6	1.45%	1	0.26%	19	2.21%	20	2.59%

Managing Change	7	1.69%	4	1.02%	15	1.75%	19	2.46%
Managing Accountability	6	1.45%	3	0.77%	18	2.10%	19	2.46%
Negotiation Skills	7	1.69%	2	0.51%	19	2.21%	23	2.99%
Organizational Mission, Vision, and Values	7	1.69%	2	0.51%	17	1.98%	20	2.59%
Presentation Skills	8	1.94%	2	0.51%	18	2.10%	23	2.99%
Problem Solving Skills	7	1.69%	4	1.02%	19	2.21%	19	2.46%
Project Management Skills	8	1.94%	3	0.77%	22	2.56%	25	3.26%
Supervisory Skills	6	1.45%	2	0.51%	23	2.68%	21	2.72%
Team Building Skills	9	2.18%	3	0.77%	20	2.33%	10	1.28%
Technical Skills	6	1.45%	1	0.26%	16	1.86%	18	2.33%

[a]21 participants did not provide any data for TNA Competency items.
[b]6 participants did not provide any data for TNA Competency items.
[c]66 participants did not provide any data for TNA Competency items.

Outlier analysis. Data were first examined visually with box plots and frequency distributions to check for potential data entry and/or coding errors. There was only one error. Participant number 85 had a value of 21 for their rating of one of their supervisor's training need items (Handling Angry / Upset Customers). The data for participant number 85 was collected via paper survey, and this value was likely to represent a data entry error. Because access to the survey hard copies was limited, the decision was made to treat this value as missing data. Other than this outlier, the range of the rest of the needs assessment data reflected the Likert scale range.

After visually examining the data for outliers, each of the study variables (individual competencies) assessing training needs (self-ascribed or ascribed to someone else) were standardized and inspected with a frequency distribution. Per standard practices (Tabachnick & Fidell, 2007), z-scores greater than or equal to +/- 3.29 were deemed univariate outliers. No univariate outliers were identified in self-ascribed TNA ratings of non-supervisors, supervisors' TNA ratings of non-supervisors, and non-supervisors' TNA ratings of supervisors. However, for supervisors' self-ascribed TNA ratings, one of the 22 TNA competencies (Basic Computer Skills) had 10 cases that met this criterion ($z = 4.276$). Although several standardized scores greater than 3.29 are not uncommon with large samples (Tabachnik & Fidell, 2007), the decision was made to remove outliers from the subsequent analysis.

Assumption checks and corrections for assumption violations. Certain assumptions need to be met to conduct an independent and/or dependent samples *t*-test to determine statistical differences between group means. The most basic assumptions refer to the nature of the independent and dependent variables. Assumption one is that the dependent variable (perceived training needs) should be measured on a continuous scale, which was met (Brown, 2011). Assumption two is that the independent variable (job position) should consist of two categorical groups, which was also met in the current study (supervisors and non-supervisors).

Another assumption specific to an independent samples *t*-test states that the observations within each sample are independent of each other and are randomly sampled. This assumption was met when examining the effect of source on TNA ratings (H1a & H1b) and examining the effect of job position on TNA rating (H3), because both groups of ratings came from different sources and all of the employees in the current study had an equal probability of being chosen to participate in the study.

Another assumption is that the distribution of scores on the dependent variable(s) are normal in the population from which the data were sample. This assumption was tested by calculating skewness and kurtosis values for each TNA competency item. Skewness and kurtosis values equal to zero indicate a perfectly normal distribution, whereas skewness values greater than three and kurtosis values greater than seven generally indicate a problematic distribution (West, Finch, & Curran, 1995).

For non-supervisor self-ascribed TNA ratings, responses on all 22 TNA competencies across all departments, and within the Human Services, Parks and Recreation, and Public Works departments, showed normal distributions (skewness < 3; kurtosis < 7). For supervisor self-ascribed TNA ratings with outliers removed, only one problematic distribution (skewness = 3.514; kurtosis = 11.055) was observed for supervisor self-ascribed TNA ratings on 'Basic Computer Skills,' across all departments. Further examination revealed a significant Shapiro-Wilk test of normality ($p = 0.000$), suggesting non-normal data. This finding was consistent with the outlier analysis, suggesting that most respondents in supervisory roles did not perceive a need for training on this competency while a few indicated a strong training need.

Tabachnick and Fidell (2013) suggest using the square root and the logarithmic (Log 10) of the non-normal data to transform moderately and substantially positive skewed data, respectively. Using the square root transformation on the 'Basic Computer Skills" training need ratings resulted in a skewness of 3.400 and a kurtosis of 10.052, whereas the logarithmic (Log 10) transformation resulted in a skewness of 3.319 and a kurtosis of 9.339. Although these transformations resulted in slightly more desirable normality statistics, both transformed variables revealed a significant Shapiro-Wilk test of normality ($p = 0.000$) suggesting that both transformation techniques were unable to normalize the distribution of the data. As a result,

neither data transformation technique was adopted in the current study, based on Tabachnick and Fidell's suggestion to only use a particular data transformation strategy when it achieved its purpose and resulted in normally distributed data.

For non-supervisor TNA ratings of supervisors, no problematic distributions were observed for any of the 22 TNA competencies across all departments, and within the Human Services, Parks and Recreation, and Public Works departments (skewness < 3; kurtosis < 7). Similarly, the supervisor TNA ratings of non-supervisors were distributed normally across all departments, and within the Human Services, Parks and Recreation, and Public Works departments (skewness < 3; kurtosis < 7).

The final assumption is homogeneity of variance, requiring that the variances of the two groups measured are equal in the population. This assumption was tested with Levene's Test of Equality of Variances for each mean difference analysis on each TNA competency. In cases where this assumption was violated (a statistically significant Levene's Test), corrections were made by using un-pooled variance and a correction to the degrees of freedom, which was displayed by the statistical software as "equal variance not assumed." Mean difference comparisons not assuming homogeneity of variance are noted in the results tables.

HYPOTHESES TESTING

The hypotheses were first tested using participants from all municipal departments. Then, additional subgroup analysis was conducted using participants from the three most represented municipal departments (i.e., Human Services, Parks and Recreation, and Public Works), which accounted for about half of the entire sample (47% of non-supervisors, 52% of supervisors). This was done to improve the confidence with which results can be interpreted and to mitigate possible clustering effects. When data are obtained from clusters, such as the different municipal

departments in the current study, the observations from within each cluster have a tendency to be somewhat more homogenous than observations drawn at random from a population (Fitzmaurice, 2001). As Fitzmaurice notes, members from the same cluster are likely to respond more similarly than members from other clusters, which can result in misleading inferences drawn from study findings. Therefore, the decision was made to conduct additional subgroup analyses to evaluate if the conclusions drawn from the analyses of the data across all departments are consistent with the analyses of the data from within the three most represented departments.

It is important to acknowledge the risk of an inflated overall type I error rate resulting from conducting multiple univariate statistical tests (Mertler & Vannatta, 2005). If 22 separate univariate analyses were conducted to detect mean differences in TNA ratings between groups with a typical .05 alpha level, then the effect of this error would be compounded over all the univariate tests. In turn, the overall probability of making a type I error with a standard alpha level of .05 would balloon to 68 percent ($.95^{22} = .32$; $1 - .32 = .68$), which is an extremely high probability of a possible statistical error and unacceptable for research purposes (Stevens, 2012). For Hypothesis 3, only 14 mean differences were examined, and if 14 separate univariate analyses were conducted, then the probability of making a type I error with a standard alpha level of .05 would be 51 percent ($.95^{14} = .39$; $1 - .49 = .51$).

Therefore, the conservative Bonferroni correction was used to account for the potentially inflated type I error rate (Dunn, 1961). The Bonferroni correction involved dividing the overall alpha level (e.g., .05) by the number of dependent variables being analyzed (Mertler & Vannatta, 2005). As a result, this study used a conservative alpha level of .002 (alpha of .05 / 22 dependent variables = .002) for Hypotheses 1 and 2, and an alpha level of .004 (alpha of .05 / 14 dependent variables = .005) for Hypothesis 3.

Results for Hypothesis 1a. Hypothesis 1a examined the effect of rating source on TNA ratings and was tested with a series of independent samples *t*-tests. Specifically, Hypothesis 1a predicted that non-supervisor training need ratings of supervisors would be significantly higher than supervisors' ratings of their own training needs. Table 7 displays means, standard deviations, mean difference significant tests, and effect sizes for each TNA competency item and a composite TNA competency variable, representing a summary statistic of all TNA competency items, for Hypotheses 1a.

All departments. Across all departments, 19 of 22 (86%) TNA competencies exhibited significant mean differences ('Contract Management', 'Communication Skills', and 'Presentation Skills' being the exceptions). Interestingly, the results indicated that for the majority 16 of 22 (73%) of the competencies, supervisors' ratings of their own training needs were significantly higher than non-supervisors' ratings of their supervisors' training needs, which was counter to the prediction made by Hypothesis 1a. In other words, only three of the significant mean differences ('Basic Computer Skills', 'Bullying & Workplace Harassment', and 'Dealing with Conflict') were in line with the hypothesized direction. There was a significant difference on the composite TNA score variable, representing a summary of TNA ratings across all competencies, opposite of the hypothesized direction with a medium-sized effect, $t(1068) = -5.539$, $p = 0.000$, $d = -0.327$. This suggested that overall self-ratings by supervisors tended to indicate higher training needs compared to the ratings of training need made by non-supervisors of supervisors. More specifically, effects of the three TNA competencies with the hypothesized differences were very small ($d = 0.192$ for 'Bullying & Workplace Harassment'), small ($d = 0.200$ for 'Dealing with Conflict'), and large ($d = 1.107$ for 'Basic Computer Skills').

Human Services. Within the Human Services department, 14 of 22 (64%) TNA competencies exhibited significant mean differences. Similar to what was found using the sample of participants from all departments, the results indicated that for the majority (13 out of 22, 59%) of the competencies, supervisors' ratings of their own training needs were significantly higher than non-supervisors' ratings of supervisors' training needs. Again, this was counter to the prediction made by Hypothesis 1a. There was a significant difference on the composite TNA variable, opposite of the hypothesized direction with a large-sized effect, $t(161) = -4.422$, $p = 0.000$, $d = -1.345$. This suggested that overall self-ratings by supervisors tended to indicate higher training needs compared to ratings by non-supervisors of supervisors' training needs within the Human Services department. More specifically, there was only one significant mean difference of TNA ratings in line with the hypothesized direction ('Basic Computer Skills'), which had a large-sized effect ($d = 1.089$).

Parks and Recreation. Within the Parks and Recreation department, only 2 of 22 (9%) TNA competencies exhibited significant mean differences ('Basic Computer Skills' and 'Bullying & Workplace Harassment'). Both TNA competencies with significant mean differences were in line with the hypothesized direction. There was not a significant difference on the composite TNA score variable, $t(127) = -0.510$, $p = 0.611$, $d = -0.078$. This suggested that overall self-ratings by supervisors tended to indicate no difference in training needs compared to ratings by non-supervisors of their supervisors' needs within the Parks and Recreation department. More specifically, the effect sizes of the two TNA competencies with hypothesized differences were medium ($d = 0.501$ for 'Bullying & Workplace Harassment') and large ($d = 0.944$ for 'Basic Computer Skills').

Public Works. Within the Public Works department, only 1 of 22 (5%) TNA competency exhibited a significant mean difference ('Basic Computer Skills'). There was not a significant difference on the composite TNA score variable, $t(76) = -0.594$, $p = 0.554$, $d = -0.098$. This suggested that overall self-ratings by supervisors tended to indicate no difference in training needs compared to ratings by non-supervisors of their supervisors' needs within the Public Works department. More specifically, the one significant mean differences of TNA ratings was in line with the hypothesized direction, with a large-sized effect ($d = 1.235$).

Table 7

Hypothesis 1a: Independent Samples Mean Difference Significance Testing and Effect Sizes Between Non-Supervisor Training Need Ratings of Supervisors and Supervisor Training Need Ratings of Self

TNA Competency

Basic Computer Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD) [a]	t	df	p	d [b]	95% CI [c] Lower	95% CI [c] Upper
All Departments	2.354 (1.411)	1.151 (0.608)	19.687	1065	.000	1.107	0.975	1.239
Human Services	1.983 (1.277)	1.000 (0.000)	8.437	119	.000	1.089	0.608	1.264
Parks and Recreation [d]	2.540 (1.351)	1.433 (0.963)	6.099	128	.000	0.944	0.633	1.255
Public Works	2.745 (1.466)	1.229 (0.770)	8.506	101	.000	1.235	0.844	1.626

Bullying & Workplace Harassment

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.538 (1.457)	2.273 (1.301)	3.112	883	.002	0.192	0.069	0.315
Human Services [d]	2.425 (1.521)	2.293 (1.364)	0.560	176	.576	0.091	-0.222	0.405
Parks and Recreation	2.803 (1.405)	2.164 (1.130)	3.297	138	.001	0.501	0.204	0.798
Public Works [d]	2.821 (1.508)	2.389 (1.358)	1.567	179	.119	0.301	-0.065	0.667

Contract Management

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper

	2.408 (1.350)	2.370 (1.185)	0.484	895	.628	0.030	-0.093	0.153
All Departments	2.408 (1.350)	2.370 (1.185)	0.484	895	.628	0.030	-0.093	0.153
Human Services [d]	2.008 (1.287)	2.293 (1.257)	-1.394	176	.165	-0.224	-0.538	0.090
Parks and Recreation [d]	2.947 (1.336)	2.491 (1.225)	2.408	184	.017	0.356	0.061	0.650
Public Works [d]	2.793 (1.409)	2.667 (1.352)	0.486	179	.628	0.091	-0.274	0.456

Communication Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments [d]	3.012 (1.466)	2.765 (1.361)	2.754	1111	.006	0.175	0.051	0.298
Human Services [d]	2.850 (1.586)	2.379 (1.374)	1.936	176	.055	0.317	0.002	0.633
Parks and Recreation [d]	3.329 (1.320)	3.036 (1.320)	1.486	184	.139	0.222	-0.071	0.515
Public Works [d]	3.186 (1.509)	3.333 (1.352)	-0.534	179	.594	-0.103	-0.468	0.263

Critical Conversations

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.967 (1.448)	3.319 (1.093)	-4.564	999	.000	-0.274	-0.398	-0.151
Human Services	2.825 (1.559)	3.241 (1.081)	-2.071	154	.040	-0.310	-0.625	0.005
Parks and Recreation	3.079 (1.383)	3.391 (1.059)	-1.659	133	.100	-0.253	-0.547	0.040
Public Works	3.069 (1.484)	3.250 (1.079)	-0.830	72	.409	-0.140	-0.505	0.226

Customer Service

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.592 (1.382)	3.439 (1.109)	-11.129	959	.000	-0.676	-0.802	-0.550
Human Services [d]	2.217 (1.317)	3.535 (1.112)	-6.571	176	.000	-1.081	-1.414	-0.748
Parks and Recreation [d]	2.882 (1.376)	3.446 (1.170)	-3.005	184	.003	-0.442	-0.737	-0.146
Public Works [d]	2.931 (1.466)	3.472 (1.158)	-2.060	179	.041	-0.410	-0.777	-0.042

Diversity / Cultural Awareness

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.534 (1.416)	3.020 (1.209)	-6.028	915	.000	-0.369	-0.493	-0.245
Human Services [d]	2.283 (1.348)	2.966 (1.256)	-3.234	176	.001	-0.524	-0.842	-0.206
Parks and Recreation [d]	2.921 (1.440)	3.073 (1.290)	-0.751	184	.453	-0.111	-0.404	0.181
Public Works	2.779 (1.474)	3.194 (1.167)	-1.807	66	.075	-0.312	-0.679	0.054

Dealing with Conflict

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.007 (1.436)	2.742 (1.198)	3.277	932	.001	0.200	0.077	0.324
Human Services [d]	2.800 (1.487)	2.707 (1.228)	0.413	176	.680	0.068	-0.245	0.382
Parks and Recreation [d]	3.184 (1.314)	2.909 (1.216)	1.468	184	.144	0.217	-0.076	0.510
Public Works [d]	3.145 (1.434)	2.694 (1.283)	1.721	179	.087	0.331	-0.035	0.698

Goal Setting

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.680 (1.373)	3.482 (1.135)	-10.447	938	.000	-0.637	-0.762	-0.511
Human Services [d]	2.300 (1.287)	3.500 (1.158)	-6.017	176	.000	-0.980	-1.310	-0.651
Parks and Recreation [d]	3.079 (1.273)	3.518 (1.179)	-2.418	184	.017	-0.358	-0.652	-0.063
Public Works [d]	2.938 (1.410)	3.333 (1.219)	-1.544	179	.124	-0.300	-0.666	0.067

Handling Angry / Upset Customers

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.621 (1.377)	3.230 (1.205)	-7.644	898	.000	-0.471	-0.595	-0.346
Human Services [d]	2.258 (1.300)	3.224 (1.377)	-4.557	176	.000	-0.721	-1.044	-0.399
Parks and Recreation [d]	2.974 (1.336)	3.264 (1.163)	-1.572	184	.118	-0.232	-0.525	0.062
Public Works [d]	2.952 (1.474)	3.167 (1.231)	-0.808	179	.430	-0.158	-0.524	0.207

Human Resources Policies & Procedures

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.798 (1.419)	3.207 (1.237)	-4.999	901	.000	-0.307	-0.431	-0.184
Human Services [d]	2.400 (1.452)	3.172 (1.230)	-3.490	176	.001	-0.574	-0.893	-0.255
Parks and Recreation [d]	3.026 (1.336)	3.327 (1.227)	-1.585	184	.115	-0.235	-0.528	0.059

| | 3.069 (1.417) | 3.222 (1.267) | -0.592 | 179 | .554 | -0.114 | -0.479 | 0.251 |

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
Public Works [d]	3.069 (1.417)	3.222 (1.267)	-0.592	179	.554	-0.114	-0.479	0.251

Leadership Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.018 (1.469)	3.431 (1.090)	-5.323	1010	.000	-0.319	-0.443	-0.196
Human Services	2.758 (1.545)	3.535 (1.030)	-3.973	154	.000	-0.592	-0.911	-0.272
Parks and Recreation [d]	3.316 (1.288)	3.536 (1.106)	-1.249	184	.213	-0.183	-0.476	0.110
Public Works	3.221 (1.525)	3.417 (1.231)	-0.863	70	.391	-0.141	-0.507	0.224

Managing Change

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.820 (1.426)	3.673 (1.071)	-11.264	1003	.000	-0.676	-0.803	-0.550
Human Services	2.542 (1.402)	4.035 (0.973)	-8.257	154	.000	-1.237	-1.576	-0.898
Parks and Recreation [d]	3.237 (1.325)	3.527 (1.139)	-1.598	184	.112	-0.235	-0.528	0.059
Public Works	3.069 (1.512)	3.639 (1.099)	-2.566	72	.012	-0.431	-0.799	-0.064

Managing Accountability

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.864 (1.422)	3.161 (1.163)	-3.750	946	.000	-0.293	-0.417	-0.170
Human Services	2.625 (1.512)	3.207 (1.151)	-2.843	144	.005	-0.433	-0.750	-0.116

Parks and Recreation [d]	3.224 (1.271)	3.173 (1.172)	0.282	184	.779	0.042	-0.251	0.334
Public Works	3.014 (1.481)	3.111 (1.090)	-0.444	71	.659	-0.075	-0.440	0.290

Negotiation Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.750 (1.375)	3.255 (1.176)	-6.437	914	.000	-0.395	-0.519	-0.271
Human Services [d]	2.517 (1.408)	3.241 (1.261)	-3.327	176	.001	-0.542	-0.860	-0.223
Parks and Recreation [d]	3.263 (1.248)	3.264 (1.155)	-0.003	184	.998	-0.001	-0.293	0.292
Public Works [d]	2.972 (1.472)	3.333 (1.146)	-1.371	179	.172	-0.274	-0.640	0.092

Organizational Mission, Vision, and Values

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.513 (1.380)	3.240 (1.209)	-9.106	897	.000	-0.560	-0.686	-0.435
Human Services [d]	2.158 (1.335)	3.207 (1.348)	-4.897	176	.000	-0.782	-1.106	-0.458
Parks and Recreation [d]	3.000 (1.337)	3.282 (1.126)	-1.553	184	.122	-0.228	-0.521	0.065
Public Works	2.862 (1.461)	3.444 (1.252)	-2.412	61	.019	-0.428	-0.795	-0.060

Presentation Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.601 (1.365)	2.768 (1.226)	-2.088	879	.037	-0.129	-0.252	-0.006

Human Services [d]	2.258 (1.344)	2.638 (1.119)	-1.983	176	.064	-0.307	-0.622	0.008
Parks and Recreation [d]	2.974 (1.346)	3.018 (1.271)	-0.229	184	.819	-0.034	-0.326	0.259
Public Works [d]	2.903 (1.455)	2.611 (1.271)	1.105	179	.271	0.214	-0.152	0.579

Problem Solving Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.768 (1.403)	3.217 (1.178)	-5.664	927	.000	-0.347	-0.470	-0.223
Human Services	2.608 (1.440)	3.414 (1.124)	-3.743	141	.000	-0.624	-0.944	-0.304
Parks and Recreation [d]	3.105 (1.332)	3.327 (1.150)	-1.212	184	.227	-0.178	-0.471	0.115
Public Works	3.021 (1.498)	3.139 (1.150)	-0.517	68	.607	-0.088	-0.453	0.277

Project Management Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.669 (1.378)	3.186 (1.159)	-6.649	926	.000	-0.406	-0.530	-0.282
Human Services [d]	2.217 (1.330)	3.103 (1.150)	-4.352	176	.000	-0.713	-1.035	-0.391
Parks and Recreation [d]	3.066 (1.230)	3.391 (1.142)	-1.803	184	.073	-0.274	-0.568	0.020
Public Works	2.993 (1.479)	3.028 (1.183)	-0.149	65	.882	-0.026	-0.391	0.339

Supervisory Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.981 (1.465)	3.421 (1.170)	-5.474	962	.000	-0.332	-0.456	-0.208
Human Services	2.775 (1.531)	3.431 (1.244)	-3.052	136	.003	-0.470	-0.788	-0.153
Parks and Recreation	3.329 (1.341)	3.527 (1.106)	-1.064	141	.289	-0.161	-0.454	0.132
Public Works [d]	3.159 (1.544)	3.500 (1.363)	-1.214	179	.226	-0.234	-0.600	0.132

Team Building Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.037 (1.476)	3.589 (1.109)	-7.032	1002	.000	-0.423	-0.547	-0.299
Human Services	2.875 (1.542)	3.776 (1.027)	-4.621	159	.000	-0.688	-1.009	-0.366
Parks and Recreation	3.434 (1.340)	3.664 (1.086)	-1.238	139	.218	-0.189	-0.482	0.104
Public Works	3.152 (1.552)	3.556 (1.182)	-1.716	68	.091	-0.293	-0.659	0.073

Technical Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.620 (1.376)	3.513 (1.171)	-11.409	918	.000	-0.699	-0.825	-0.573
Human Services	2.200 (1.406)	3.897 (1.003)	-9.224	151	.000	-1.390	-1.735	-1.044
Parks and Recreation [d]	3.026 (1.336)	3.518 (1.225)	-2.594	184	.010	-0.384	-0.679	-0.089
Public Works [d]	2.959 (1.448)	3.389 (1.225)	-1.642	179	.102	-0.321	-0.687	0.046

Composite TNA Score

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.734 (1.210)	3.070 (0.804)	-5.539	1068	.000	-0.327	-0.451	-0.203
Human Services	2.449 (1.145)	3.897 (1.003)	-4.422	161	.000	-1.345	-1.688	-1.002
Parks and Recreation	3.079 (1.159)	3.158 (0.829)	-0.510	127	.611	-0.078	-0.371	0.214
Public Works	2.989 (1.333)	3.101 (0.919)	-0.594	76	.554	-0.098	-0.463	0.267

Note. Sample sizes (Non-Supervisors / Supervisors): All Departments (721 / 392), Human Services (120 / 58), Parks and Recreation (76 / 110), Public Works (145 / 36). Levene's Test for Equality of Variances was conducted and all reported analyses assumed unequal variance unless indicated otherwise.

[a] Sample sizes for 'Basic Computer Skills' analysis with outliers removed: All Departments (721 / 383), Human Services (120 / 58), Parks and Recreation (76 / 104), Public Works (145 / 35).
[b] Cohen's D.
[c] Confidence Interval for Effect Size.
[d] Equal variance assumed.

Results for Hypothesis 1b. Hypothesis 1b examined the effects of rating source on TNA ratings, and were tested with a series of independent samples *t*-tests. Specifically, Hypothesis 1b predicted that supervisor training need ratings of non-supervisors would be significantly higher than non-supervisors' ratings of their own training needs. Table 8 displays means, standard deviations, mean difference significant tests, and effect sizes for each TNA competency item and a composite TNA competency variable, representing a summary statistic of all TNA competency items, for Hypotheses 1b.

All departments. Across all departments, 17 of 22 (77%) TNA competencies exhibited significant mean differences in rating levels. For all of the competencies with significant mean differences, non-supervisors' ratings of their own training needs were significantly lower than supervisors' ratings of non-supervisors, which was in line with the predictions made by Hypothesis 1b. There was also a significant difference on the composite TNA variable in the

hypothesized direction with a medium-sized effect, $t(891) = 9.349$, $p = 0.000$, $d = 0.564$. This suggested that overall self-ratings by non-supervisors tended to indicate lower training needs compared to ratings by supervisors of non-supervisors' training needs. More specifically, effect sizes of the 17 TNA competencies with significant mean differences ranged from small ($d = 0.233$ for 'Diversity / Cultural Awareness') to large ($d = 1.363$ for 'Basic Computer Skills'). There were a total of four large effects ($d > 0.8$), three medium effects ($d = 0.5 - 0.8$), and 10 small effects ($d = 0.2 – 0.5$).

Human Services. Within the Human Services department, 10 of 22 (45%) TNA competencies exhibited significant mean differences in rating levels. For most (9 out of 22, 41%) of the competencies, non-supervisors' ratings of their own training needs were significantly lower than supervisors' ratings of non-supervisors, which was in line with the predictions made by Hypothesis 1b. Only 'Project Management Skills' were rated significantly higher by non-supervisors. There was a significant difference on the composite TNA variable, representing a summary of TNA ratings across all competencies, in the hypothesized direction with a medium-sized effect, $t(179) = 4.130$, $p = 0.000$, $d = 0.716$. This suggested that overall self-ratings by non-supervisors tended to indicate lower training needs compared to ratings by supervisors of non-supervisors' needs within the Human Services department. More specifically, effect sizes of the nine TNA competencies with hypothesized differences ranged from medium ($d = 0.577$ for 'Bullying & Workplace Harassment') to very large ($d = 3.092$ for 'Basic Computer Skills'). There were a total of three large effects ($d > 0.8$) and six medium effects ($d = 0.5 - 0.8$).

Parks and Recreation. Within the Parks and Recreation department, 10 of 22 (45%) TNA competencies exhibited significant mean differences in rating levels. For all of the TNA competencies with significant differences, non-supervisors' ratings of their own training need

were significantly lower than supervisors' ratings of non-supervisors, which was in line with the predictions made by Hypothesis 1b. None of the TNA competencies were rated significantly higher by non-supervisors. There was a significant difference in the hypothesized direction with a small-sized effect on the composite TNA variable, $t(162) = 3.336$, $p = 0.001$, $d = 0.477$. This suggested that overall self-ratings by non-supervisors tended to indicate lower training needs compared to ratings by supervisors of non-supervisors' needs within the Parks and Recreation department. More specifically, effect sizes of the 10 TNA competencies with hypothesized differences ranged from small ($d = 0.445$ for 'Critical Conversations') to medium ($d = 0.748$ for 'Dealing with Conflict'). There were a total of six medium effects ($d = 0.5 - 0.8$) and four small effects ($d = 0.4 - 0.5$).

Public Works. Within the Public Works department, only 2 of 22 (9%) TNA competencies exhibited significant mean differences in rating levels. For all the significant differences (2 out of 2), non-supervisors' ratings of their own training needs were significantly lower than supervisors' ratings of non-supervisors, which was in line with the predictions made by Hypothesis 1b. There was not a significant difference on the composite TNA variable, $t(173) = 0.828$, $p = 0.409$, $d = 0.170$. This suggested that overall self-ratings by non-supervisors tended to indicate no difference in training needs compared to ratings by supervisors of non-supervisors' needs within the Public Works department. More specifically, effect sizes of the two TNA competencies with hypothesized differences were both of medium magnitude ($d = 0.598$ for 'Basic Computer Skills'; $d = 0.689$ for 'Dealing with Conflict').

Table 8

Hypothesis 1b: Independent Samples Mean Difference Significance Testing and Effect Sizes Between Supervisor Training Need Ratings of Non-Supervisors and Non-Supervisor Training Need Ratings of Self

TNA Competency

Basic Computer Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d [a]	95% CI [b] Lower	95% CI [b] Upper
All Departments	3.152 (1.290)	1.486 (1.150)	21.318	663	.000	1.363	1.229	1.498
Human Services	3.840 (1.299)	1.000 (0.000)	15.456	49	.000	3.092	2.62	3.53
Parks and Recreation	3.026 (1.158)	2.187 (1.414)	4.577	172	.000	0.649	0.367	0.931
Public Works	3.152 (1.395)	2.239 (1.650)	3.263	55	.002	0.598	0.214	0.981

Bullying & Workplace Harassment

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.889 (1.194)	2.457 (1.427)	5.398	863	.000	0.328	0.205	0.452
Human Services [c]	3.140 (1.429)	2.321 (1.410)	3.483	179	.001	0.577	0.246	0.908
Parks and Recreation	2.939 (1.101)	2.571 (1.423)	2.083	156	.039	0.289	0.013	0.566
Public Works [c]	3.182 (1.380)	2.599 (1.478)	2.066	173	.040	0.408	0.027	0.789

Contract Management

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper

	2.168 (1.282)	2.385 (1.357)	-2.651	773	.008	-0.164	-0.287	-0.041
All Departments	2.168 (1.282)	2.385 (1.357)	-2.651	773	.008	-0.164	-0.287	-0.041
Human Services [c]	1.800 (1.228)	2.260 (1.345)	-2.103	179	.037	-0.357	-0.685	-0.029
Parks and Recreation [c]	2.339 (1.270)	2.802 (1.335)	-2.541	204	.012	-0.355	-0.632	-0.078
Public Works [c]	2.273 (1.206)	2.775 (1.489)	-1.802	173	.073	-0.371	-0.751	0.010

Communication Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.872 (.992)	2.688 (1.510)	15.960	1048	.000	0.927	0.798	1.055
Human Services	3.920 (0.922)	2.412 (1.548)	8.023	147	.000	1.184	0.836	1.532
Parks and Recreation	4.052 (0.926)	3.319 (1.228)	4.732	163	.000	0.674	0.391	0.957
Public Works	3.576 (1.001)	3.486 (1.433)	0.424	66	.673	0.073	-0.306	0.452

Critical Conversations

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.725 (1.019)	3.306 (1.220)	6.155	865	.000	0.373	0.249	0.497
Human Services	3.800 (1.010)	3.236 (1.329)	3.060	116	.003	0.478	0.148	0.807
Parks and Recreation	3.870 (1.022)	3.374 (1.199)	3.145	177	.002	0.445	0.167	0.724
Public Works	3.606 (1.029)	3.437 (1.291)	0.809	58	.422	0.145	-0.234	0.524

Customer Service

Department	Mean Supervisor	Mean Non-Supervisor	t	df	p	d	95% CI Lower	95% CI Upper

	Ratings of Non-Supervisors (SD)	Ratings of Self (SD)						
All Departments	3.859 (1.116)	3.309 (1.247)	7.559	812	.000	0.465	0.340	0.589
Human Services [c]	4.080 (1.006)	3.389 (1.212)	3.582	179	.000	0.620	0.288	0.952
Parks and Recreation	4.078 (1.044)	3.363 (1.269)	4.340	173	.000	0.615	0.334	0.897
Public Works [c]	3.606 (1.223)	3.401 (1.305)	0.821	173	.413	0.162	-0.217	0.541

Diversity / Cultural Awareness

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments [c]	3.227 (1.221)	2.926 (1.364)	3.639	1165	.000	0.233	0.109	0.356
Human Services [c]	3.640 (1.191)	2.816 (1.445)	3.587	179	.000	0.622	0.290	0.954
Parks and Recreation [c]	3.444 (1.164)	2.934 (1.332)	2.927	204	.004	0.408	0.130	0.686
Public Works [c]	3.121 (1.317)	3.092 (1.383)	0.112	173	.911	0.021	-0.357	0.400

Dealing with Conflict

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.837 (1.036)	2.727 (1.341)	15.496	927	.000	0.926	0.798	1.055
Human Services [c]	4.000 (1.178)	2.778 (1.360)	5.596	179	.000	0.960	0.620	1.301
Parks and Recreation	4.035 (0.982)	3.198 (1.240)	5.264	169	.000	0.748	0.464	1.033
Public Works	3.727 (1.008)	2.887 (1.400)	3.977	64	.000	0.689	0.303	1.074

Goal Setting

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.736 (1.025)	3.307 (1.236)	6.240	871	.000	0.378	0.254	0.502
Human Services [c]	3.860 (1.143)	3.549 (1.222)	1.554	179	.122	0.263	-0.064	0.590
Parks and Recreation	3.817 (0.951)	3.418 (1.202)	2.594	169	.010	0.368	0.091	0.645
Public Works [c]	3.727 (1.069)	3.268 (1.282)	1.910	173	.058	0.389	0.008	0.770

Handling Angry / Upset Customers

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.773 (1.121)	3.107 (1.299)	8.998	840	.000	0.549	0.424	0.674
Human Services	4.060 (0.956)	3.152 (1.291)	5.151	119	.000	0.799	0.463	1.135
Parks and Recreation	3.957 (1.087)	3.418 (1.212)	3.316	183	.001	0.468	0.190	0.747
Public Works [c]	3.545 (1.063)	3.042 (1.373)	1.971	173	.050	0.410	0.028	0.791

Human Resources Policies & Procedures

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.421 (1.104)	2.099 (1.300)	4.401	852	.000	1.096	0.966	1.227
Human Services [c]	3.600 (1.142)	3.000 (1.370)	2.752	179	.007	0.476	0.146	0.805
Parks and Recreation [c]	3.521 (1.029)	3.164 (1.240)	2.257	204	.025	0.313	0.037	0.590

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
Public Works [c]	3.303 (1.075)	3.289 (1.329)	0.058	173	.954	0.012	-0.367	0.390

Leadership Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.723 (0.991)	3.167 (1.330)	7.982	955	.000	0.474	0.350	0.598
Human Services	3.720 (0.809)	3.244 (1.324)	2.923	144	.004	0.434	0.105	0.763
Parks and Recreation	4.017 (0.975)	3.461 (1.241)	3.570	161	.000	0.498	0.219	0.777
Public Works [c]	3.364 (1.141)	3.359 (1.396)	0.017	173	.986	0.004	-0.375	0.383

Managing Change

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.723 (1.054)	3.404 (1.271)	4.505	871	.000	0.273	0.150	0.397
Human Services	4.020 (1.059)	3.671 (1.255)	1.876	104	.063	0.301	-0.027	0.628
Parks and Recreation	3.782 (0.953)	3.330 (1.308)	2.771	159	.006	0.395	0.117	0.673
Public Works [c]	3.485 (1.228)	3.261 (1.319)	0.891	173	.374	0.176	-0.203	0.555

Managing Accountability

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments [c]	3.787 (1.073)	2.992 (1.262)	10.517	1165	.000	0.679	0.553	0.805
Human Services [c]	3.960 (1.068)	3.145 (1.348)	3.837	179	.000	0.670	0.337	1.003

	3.913 (0.987)	3.142 (1.170)	5.123	204	.000	0.712	0.429	0.996
Parks and Recreation [c]	3.913 (0.987)	3.142 (1.170)	5.123	204	.000	0.712	0.429	0.996
Public Works [c]	3.515 (1.176)	2.979 (1.269)	2.216	173	.028	0.438	0.057	0.820

Negotiation Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments [c]	3.229 (1.182)	2.936 (1.318)	3.673	1165	.000	0.234	0.111	0.357
Human Services [c]	3.400 (1.212)	3.053 (1.426)	1.520	179	.130	0.262	-0.065	0.589
Parks and Recreation [c]	3.356 (1.179)	3.154 (1.341)	1.153	204	.250	0.160	-0.115	0.435
Public Works [c]	3.152 (1.278)	2.944 (1.287)	0.837	173	.404	0.162	-0.217	0.541

Organizational Mission, Vision, and Values

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments [c]	3.216 (1.188)	3.116 (1.301)	1.258	1165	.209	0.080	-0.043	0.203
Human Services [c]	3.500 (1.164)	3.190 (1.353)	1.425	179	.156	0.246	-0.081	0.572
Parks and Recreation [c]	3.321 (1.203)	3.000 (1.325)	1.822	204	.070	0.254	-0.022	0.530
Public Works [c]	3.030 (1.237)	3.282 (1.334)	-0.988	173	.324	-0.196	-0.575	0.183

Presentation Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.237 (1.158)	2.754 (1.295)	6.407	813	.000	0.393	0.269	0.517

Human Services [c]	3.360 (1.273)	2.748 (1.279)	2.881	179	.004	0.480	0.150	0.809
Parks and Recreation [c]	3.243 (1.073)	3.132 (1.310)	0.672	204	.502	0.093	-0.182	0.368
Public Works [c]	2.848 (1.093)	2.901 (1.354)	-0.209	173	.835	-0.043	-0.422	0.336

Problem Solving Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.781 (0.976)	3.198 (1.269)	8.623	930	.000	0.515	0.390	0.640
Human Services	3.860 (0.947)	3.198 (1.291)	3.776	120	.000	0.585	0.253	0.916
Parks and Recreation	3.956 (0.902)	3.341 (1.301)	3.842	154	.000	0.549	0.269	0.829
Public Works [c]	3.545 (1.175)	3.268 (1.282)	1.138	173	.257	0.225	-0.154	0.605

Project Management Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments [c]	2.976 (1.235)	3.188 (1.240)	-2.732	1165	.006	-0.171	-0.294	-0.048
Human Services [c]	2.600 (1.142)	3.290 (1.261)	-3.374	179	.001	-0.574	-0.905	-0.242
Parks and Recreation [c]	3.070 (1.240)	3.308 (1.371)	-1.305	204	.193	-0.182	-0.458	0.093
Public Works [c]	2.970 (1.185)	3.232 (1.281)	-1.076	173	.284	-0.212	-0.592	0.167

Supervisory Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.344 (1.187)	3.143 (1.379)	2.566	842	.010	0.156	0.033	0.279
Human Services [c]	3.220 (1.200)	2.961 (1.459)	1.115	179	.266	0.194	-0.133	0.520
Parks and Recreation	3.617 (1.089)	3.407 (1.476)	1.139	161	.256	0.162	-0.114	0.437
Public Works [c]	3.121 (1.317)	3.458 (1.292)	-1.343	173	.181	-0.258	-0.638	0.121

Team Building Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.816 (1.065)	3.217 (1.387)	8.107	931	.000	0.484	0.360	0.609
Human Services	3.920 (1.026)	3.396 (1.460)	2.705	126	.008	0.415	0.087	0.744
Parks and Recreation	4.026 (1.021)	3.429 (1.351)	3.501	163	.001	0.499	0.219	0.778
Public Works [c]	3.576 (1.173)	3.366 (1.355)	0.819	173	.414	0.166	-0.213	0.545

Technical Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.341 (1.154)	3.302 (1.289)	.526	812	.599	0.032	-0.091	0.155
Human Services [c]	3.080 (1.306)	3.374 (1.371)	-1.306	179	.193	-0.220	-0.546	0.107
Parks and Recreation	3.548 (1.094)	3.539 (1.369)	0.053	170	.958	0.007	-0.268	0.282
Public Works [c]	3.061 (1.298)	3.345 (1.283)	-1.145	173	.254	-0.220	-0.600	0.159

Composite TNA Score

Department	Mean Supervisor	Mean Non-Supervisor	t	df	p	d	95% CI Lower	95% CI Upper

	Ratings of Non-Supervisors (SD)	Ratings of Self (SD)						
All Departments	3.447 (0.761)	2.964 (0.942)	9.349	891	.000	0.564	0.439	0.689
Human Services [c]	3.562 (0.748)	2.963 (0.916)	4.130	179	.000	0.716	0.382	1.050
Parks and Recreation	3.588 (0.721)	3.181 (0.969)	3.336	162	.001	0.477	0.198	0.755
Public Works [c]	3.295 (0.858)	3.132 (1.048)	0.828	173	.409	0.170	-0.209	0.549

Note. Sample sizes (Supervisors / Non-Supervisors): All Departments (375 / 792), Human Services (50 / 131), Parks and Recreation (115 / 91), Public Works (33 / 142). Levene's Test for Equality of Variances was conducted and all reported analyses assumed unequal variance unless indicated otherwise.

[a]Cohen's D.
[b]Confidence Interval for Effect Size.
[c]Equal variance assumed.

Results for Hypothesis 2a. Hypothesis 2a examined the effect of rating target on TNA ratings and was tested with a series of paired samples t-tests. Specifically, Hypothesis 2a predicted that supervisors' training need ratings of subordinates would be significantly higher than supervisors' ratings of their own training needs. Table 9 displays means, standard deviations, mean difference significant testing, and effect sizes for each TNA competency item and a composite TNA competency variable, representing a summary statistic of all TNA competency items for Hypotheses 2a.

All departments. Across all departments, 15 of 22 (68%) TNA competencies exhibited significant mean differences. The results indicated that for all of these significant differences, supervisors' ratings of their own training needs were significantly lower than the training needs ratings supervisors provided for subordinates, which was in line with the prediction made by Hypothesis 2a. There was a significant difference on the composite TNA score variable representing a summary of TNA ratings across all competencies in the hypothesized direction

with a medium-sized effect, $t(360) = 10.867$, $p = 0.000$, $d = 0.514$. This suggested that overall supervisors' self-ratings tended to indicate less of a need for training compared to the ratings supervisors provided for their subordinates. Effect sizes of the 15 TNA competencies with the hypothesized differences ranged from small ($d = 0.186$ for 'Diversity / Cultural Awareness') to large ($d = 2.003$ for 'Basic Computer Skills'). There were a total of four large effects ($d > 0.8$), two medium effects ($d = 0.5 - 0.8$), and nine small effects ($d = 0.2 - 0.5$).

Human Services. Within the Human Services department, 12 of 22 (55%) TNA competencies exhibited significant mean differences. The results indicated that for almost all of the significant differences (11 of 12, 92%), supervisors' ratings of their own training needs were significantly lower than the training needs ratings supervisors provided for subordinates, which was in line with the prediction made by Hypothesis 2a. Only one TNA competency ('Technical Skills') was rated significantly higher by supervisors of themselves than for non-supervisors, which was opposite of the prediction made by Hypothesis 2a. There was a significant difference on the composite TNA score variable, in the hypothesized direction with a medium-sized effect, $t(48) = 5.202$, $p = 0.000$, $d = 0.705$. This suggested that overall supervisors' self-ratings tended to indicate less of a need for training compared to the ratings supervisors provided for their subordinates. Effect sizes of the 11 TNA competencies with hypothesized differences ranged from small ($d = 0.392$ for 'Human Resources Policies & Procedures') to very large ($d = 3.091$ for 'Basic Computer Skills'). There were a total of two large effects ($d > 0.8$), seven medium effects ($d = 0.5 - 0.8$), and two small effects ($d = 0.2 - 0.5$).

Parks and Recreation. Within the Parks and Recreation department, 12 of 22 (55%) TNA competencies exhibited significant mean differences. The results indicated that for all of the significant mean differences, supervisors' ratings of their own training needs were significantly

lower than the training needs ratings supervisors provided for subordinates, which was in line with the prediction made by Hypothesis 2a. None of the significant mean differences were opposite of the hypothesized direction. There was a significant difference on the composite TNA score variable, in the hypothesized direction with a medium-sized effect, $t(105) = 6.003$, $p = 0.000$, $d = 0.619$. This suggested that overall supervisors' self-ratings tended to indicate less of a need for training compared to the ratings supervisors provided for their subordinates. Effect sizes of the 12 TNA competencies with the hypothesized differences ranged from small ($d = 0.344$ for 'Goal Setting') to large ($d = 1.481$ for 'Basic Computer Skills'). There were a total of three large effect sizes ($d > 0.8$), seven medium effect sizes ($d = 0.5 - 0.8$), and two small effect sizes ($d = 0.2 – 0.5$).

Public Works. Within the Public Works department, only 2 of 22 (9%) TNA competencies exhibited significant mean differences. The results indicated that for both of the competencies with significant mean differences ('Basic Computer Skills' and 'Dealing with Conflict'), supervisors' ratings of their own training needs were significantly lower than the training need ratings supervisors provided for subordinates, which was in line with the prediction made by Hypothesis 2a. There was no significant difference on the composite TNA score variable, $t(29) = 1.417$, $p = 0.000$, $d = -0.298$. This suggests that overall supervisors' self-ratings of training needs did not differ compared to the ratings supervisors provided for their subordinates. More specifically, effect sizes of the two TNA competencies with the hypothesized differences were both large ($d = 0.937$ for 'Dealing with Conflict'; $d = 2.085$ for 'Basic Computer Skills').

Table 9

Hypothesis 2a: Paired Samples Mean Difference Significance Testing and Effect Sizes Between Supervisor Training Needs Ratings of Non-Supervisors and Supervisor Training Needs Ratings of Self

TNA Competency

Basic Computer Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD) [a]	*t*	*df*	*p*	*d* [b]	95% CI [c] Lower	95% CI [c] Upper
All Departments	3.155 (1.311)	1.133 (0.565)	26.686	353	.000	2.003	1.822	2.184
Human Services	3.857 (1.307)	1.000 (0.000)	15.302	48	.000	3.091	2.48	3.65
Parks and Recreation	3.020 (1.208)	1.416 (0.941)	11.015	100	.000	1.481	1.170	1.792
Public Works	3.200 (1.400)	1.067 (0.365)	8.026	29	.000	2.085	1.456	2.714

Bullying & Workplace Harassment

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	*t*	*df*	*p*	*d*	95% CI Lower	95% CI Upper
All Departments	2.886 (1.207)	2.266 (1.289)	7.536	360	.000	0.497	0.348	0.645
Human Services	3.143 (1.443)	2.224 (1.295)	3.304	48	.002	0.670	0.263	1.077
Parks and Recreation	2.925 (1.039)	2.179 (1.119)	5.891	105	.000	0.691	0.414	0.968
Public Works	3.233 (1.382)	2.467 (1.408)	2.797	29	.009	0.549	0.034	1.065

Contract Management

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	*t*	*df*	*p*	*d*	95% CI Lower	95% CI Upper

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.161 (1.296)	2.316 (1.15)	-1.921	360	.056	-0.127	-0.273	0.020
Human Services	1.776 (1.229)	2.163 (1.196)	-1.780	48	.081	-0.319	-0.718	0.079
Parks and Recreation	2.358 (1.303)	2.406 (1.161)	-0.318	105	.751	-0.039	-0.308	0.230
Public Works	2.200 (1.215)	2.767 (1.331)	-1.768	29	.088	-0.445	-0.957	0.067

Communication Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.886 (0.989)	2.715 (1.349)	14.563	360	.000	0.990	0.835	1.145
Human Services	3.939 (0.922)	2.224 (1.327)	8.152	48	.000	1.501	1.053	1.949
Parks and Recreation	4.104 (0.894)	3.019 (1.309)	7.820	105	.000	0.968	0.683	1.253
Public Works	3.533 (1.008)	3.233 (1.331)	1.201	29	.240	0.254	-0.254	0.762

Critical Conversations

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.737 (1.025)	3.305 (1.091)	6.627	360	.000	0.408	0.261	0.556
Human Services	3.816 (1.014)	3.204 (1.099)	3.610	48	.001	0.579	0.175	0.983
Parks and Recreation	3.915 (1.025)	3.349 (1.051)	4.607	105	.000	0.545	0.271	0.819
Public Works	3.567 (1.040)	3.233 (1.040)	1.381	29	.178	0.321	-0.188	0.830

Customer Service

Department	Mean Supervisor	Mean Supervisor	t	df	p	d	95% CI Lower	95% CI Upper

	Ratings of Non-Supervisors (SD)	Ratings of Self (SD)						
All Departments	3.873 (1.113)	3.44 (1.109)	6.603	360	.000	0.390	0.242	0.537
Human Services	4.102 (1.005)	3.51 (1.139)	3.537	48	.001	0.551	0.148	0.955
Parks and Recreation	4.132 (1.005)	3.453 (1.156)	5.646	105	.000	0.627	0.351	0.903
Public Works	3.567 (1.251)	3.500 (1.106)	0.311	29	.758	0.057	-0.449	0.563

Diversity / Cultural Awareness

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.224 (1.230)	2.997 (1.210)	3.142	360	.002	0.186	0.040	0.332
Human Services	3.653 (1.200)	3.000 (1.291)	3.474	48	.001	0.524	0.121	0.927
Parks and Recreation	3.462 (1.181)	3.047 (1.268)	2.889	105	.005	0.339	0.068	0.610
Public Works	3.033 (1.326)	3.167 (1.147)	-0.548	29	.588	-0.108	-0.615	0.398

Dealing with Conflict

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.839 (1.034)	2.706 (1.194)	16.597	360	.000	1.014	0.859	1.169
Human Services	4.020 (1.181)	2.673 (1.231)	6.433	48	.000	1.117	0.691	1.542
Parks and Recreation	4.047 (0.960)	2.868 (1.212)	9.335	105	.000	1.078	0.790	1.367
Public Works	3.700 (1.022)	2.633 (1.245)	4.209	29	.000	0.937	0.404	1.470

Goal Setting

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.748 (1.027)	3.482 (1.133)	4.374	360	.000	0.246	0.100	0.392
Human Services	3.878 (1.148)	3.531 (1.157)	1.968	48	.055	0.301	-0.097	0.699
Parks and Recreation	3.858 (0.941)	3.491 (1.181)	3.370	105	.001	0.344	0.073	0.615
Public Works	3.700 (1.088)	3.333 (1.213)	1.779	29	.086	0.319	-0.191	0.828

Handling Angry / Upset Customers

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.784 (1.119)	3.222 (1.204)	8.229	360	.000	0.484	0.336	0.632
Human Services	4.082 (0.954)	3.224 (1.418)	4.288	48	.000	0.710	0.302	1.118
Parks and Recreation	4.019 (1.060)	3.245 (1.161)	6.441	105	.000	0.696	0.419	0.974
Public Works	3.500 (1.075)	3.133 (1.196)	1.779	29	.086	0.323	-0.187	0.832

Human Resources Policies & Procedures

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.429 (1.111)	3.177 (1.241)	3.387	360	.001	0.214	0.068	0.360
Human Services	3.612 (1.151)	3.143 (1.242)	2.130	48	.038	0.392	-0.008	0.791
Parks and Recreation	3.547 (1.025)	3.283 (1.225)	1.894	105	.061	0.234	-0.036	0.504

| Public Works | 3.3 (1.119) | 3.167 (1.289) | .571 | 29 | .573 | 0.110 | -0.396 | 0.617 |

Leadership Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.729 (0.991)	3.404 (1.097)	4.758	360	.000	0.311	0.164	0.458
Human Services	3.735 (0.811)	3.490 (1.043)	1.450	48	.153	0.262	-0.135	0.660
Parks and Recreation	4.047 (0.898)	3.538 (1.106)	4.190	105	.000	0.505	0.232	0.779
Public Works	3.333 (1.155)	3.367 (1.189)	-0.141	29	.889	-0.029	-0.535	0.477

Managing Change

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.729 (1.061)	3.659 (1.076)	1.059	360	.290	0.066	-0.080	0.211
Human Services	4.041 (1.060)	4.041 (0.999)	0.000	48	1.000	0.000	-0.396	0.396
Parks and Recreation	3.783 (0.956)	3.491 (1.140)	2.216	105	.029	0.278	0.007	0.548
Public Works	3.500 (1.280)	3.567 (1.165)	-0.284	29	.778	-0.055	-0.561	0.451

Managing Accountability

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.792 (1.082)	3.166 (1.174)	9.550	360	.000	0.555	0.406	0.703
Human Services	3.980 (1.070)	3.265 (1.169)	4.082	48	.000	0.638	0.232	1.044

Parks and Recreation	3.915 (0.996)	3.160 (1.188)	6.466	105	.000	0.689	0.412	0.966
Public Works	3.533 (1.224)	3.100 (1.029)	2.037	29	.051	0.383	-0.128	0.894

Negotiation Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.230 (1.188)	3.252 (1.176)	-.313	360	.755	-0.019	-0.165	0.127
Human Services	3.408 (1.223)	3.224 (1.246)	0.815	48	.419	0.149	-0.247	0.546
Parks and Recreation	3.387 (1.184)	3.236 (1.159)	1.133	105	.260	0.129	-0.141	0.398
Public Works	3.067 (1.285)	3.400 (1.037)	-1.505	29	.143	-0.285	-0.794	0.223

Organizational Mission, Vision, and Values

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.211 (1.197)	3.219 (1.215)	-0.114	360	.909	-0.007	-0.153	0.139
Human Services	3.510 (1.175)	3.143 (1.384)	1.844	48	.071	0.286	-0.112	0.684
Parks and Recreation	3.321 (1.231)	3.255 (1.113)	0.467	105	.641	0.056	-0.213	0.326
Public Works	2.933 (1.230)	3.467 (1.252)	-2.075	29	.047	-0.430	-0.942	0.082

Presentation Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.241 (1.171)	2.740 (1.224)	6.961	360	.000	0.418	0.271	0.566

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
Human Services	3.367 (1.286)	2.612 (1.115)	3.643	48	.001	0.627	0.222	1.033
Parks and Recreation	3.255 (1.087)	2.981 (1.272)	1.977	105	.051	0.232	-0.039	0.502
Public Works	2.800 (1.126)	2.567 (1.194)	.980	29	.335	0.201	-0.307	0.708

Problem Solving Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.789 (0.980)	3.188 (1.180)	9.516	360	.000	0.554	0.405	0.703
Human Services	3.878 (0.949)	3.367 (1.167)	3.423	48	.001	0.480	0.079	0.882
Parks and Recreation	3.991 (0.900)	3.302 (1.148)	5.561	105	.000	0.668	0.391	0.945
Public Works	3.500 (1.196)	3.100 (1.094)	1.884	29	.070	0.349	-0.161	0.859

Project Management Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.975 (1.250)	3.166 (1.160)	-2.358	360	.019	-0.158	-0.305	-0.012
Human Services	2.592 (1.153)	3.041 (1.190)	-2.244	48	.029	-0.383	-0.783	0.016
Parks and Recreation	3.085 (1.266)	3.358 (1.148)	-1.653	105	.101	-0.226	-0.496	0.044
Public Works	2.933 (1.230)	3.067 (1.081)	-0.626	29	.536	-0.116	-0.622	0.391

Supervisory Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.349 (1.197)	3.396 (1.186)	-0.616	360	.538	-0.039	-0.185	0.106
Human Services	3.224 (1.212)	3.347 (1.267)	-0.544	48	.589	-0.099	-0.495	0.297
Parks and Recreation	3.651 (1.087)	3.519 (1.097)	1.005	105	.317	0.121	-0.149	0.390
Public Works	3.100 (1.373)	3.500 (1.432)	-1.560	29	.130	-0.285	-0.794	0.223

Team Building Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.820 (1.071)	3.568 (1.121)	3.861	360	.000	0.230	0.084	0.376
Human Services	3.939 (1.029)	3.673 (1.068)	1.443	48	.156	0.254	-0.144	0.651
Parks and Recreation	4.047 (1.027)	3.651 (1.078)	3.444	105	.001	0.376	0.105	0.648
Public Works	3.533 (1.196)	3.533 (1.252)	0.000	29	1.000	0.000	-0.506	0.506

Technical Skills

Department	Mean Supervisor Ratings of Non-Supervisors (SD)	Mean Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.343 (1.161)	3.49 (1.174)	-2.040	360	.042	-0.126	-0.272	0.020
Human Services	3.082 (1.320)	3.816 (1.034)	-3.852	48	.000	-0.619	-1.024	-0.214
Parks and Recreation	3.566 (1.087)	3.519 (1.213)	0.343	105	.732	0.041	-0.228	0.310
Public Works	3.033 (1.351)	3.333 (1.213)	-1.273	29	.213	-0.234	-0.741	0.274

Composite TNA Score

Department	Mean Supervisor	Mean Supervisor	t	df	p	d	95% CI Lower	95% CI Upper

	Ratings of Non-Supervisors (SD)	Ratings of Self (SD)						
All Departments	3.452 (0.765)	3.049 (0.802)	10.867	360	.000	0.514	0.366	0.662
Human Services	3.574 (0.752)	3.042 (0.757)	5.202	48	.000	0.705	0.297	1.113
Parks and Recreation	3.612 (0.720)	3.133 (0.823)	6.003	105	.000	0.619	0.344	0.895
Public Works	3.264 (0.875)	3.077 (0.907)	1.417	29	.167	0.210	-0.298	0.717

Note. Sample sizes (Supervisors): All Departments (361), Human Services (49), Parks and Recreation (106), Public Works (30). All reported analyses assumed unequal variance based on the assumption that the variances between two samples in a paired samples t-test are not equal.

[a]Sample sizes for 'Basic Computer Skills' analysis with outliers removed: All Departments (354), Human Services (49), Parks and Recreation (101), Public Works (30).
[b]Cohen's D.
[c]Confidence Interval for Effect Size.

Results for Hypothesis 2b. Hypothesis 2b examined the effect of rating target on TNA ratings and was tested with a series of paired samples t-tests. Specifically, Hypothesis 2b predicted that non-supervisors' training need ratings of supervisors would be significantly higher than non-supervisors' ratings of their own training needs. Table 10 displays means, standard deviations, mean difference significant testing, and effect sizes for each TNA competency item and a composite TNA competency variable, representing a summary statistic of all TNA competency items, for Hypotheses 2b.

All departments. Across all departments, 15 of 22 (68%) TNA competencies exhibited significant mean differences in rating levels. Interestingly, the results indicated that for the majority (12 out of 22) of the competencies, non-supervisors' ratings of their own training needs were significantly higher than non-supervisors' ratings of supervisors' training needs, which was counter to the prediction made by Hypothesis 2b. There was a significant difference on the composite TNA score variable, opposite of the hypothesized direction with a small-sized effect,

$t(687) = -5.203, p = 0.000, d = -0.225$. This suggested that overall self-ratings by non-supervisors tended to indicate higher training needs compared to ratings by non-supervisors of supervisors' training needs. More specifically, only three of the significant mean differences ('Basic Computer Skills', 'Communication Skills', and 'Dealing with Conflict') were in line with the hypothesized direction. Effect sizes of the three TNA competencies with hypothesized differences were very small ($d = 0.196$ for 'Dealing with Conflict'), small ($d = 0.218$), and medium ($d = 0.667$ for Basic Computer Skills).

Human Services. Within the Human Services department, 11 of 22 (50%) TNA competencies exhibited significant mean differences in rating levels. Interestingly, the results indicated that for most (10 out of 22) of the competencies, non-supervisors' ratings of their own training needs were significantly higher than non-supervisors' ratings of their supervisors' training needs, which was counter to the prediction made by Hypothesis 2b. In other words, only one of the significant mean differences ('Basic Computer Skills') were in line with the hypothesized direction, with a large-sized effect ($d = 1.078$). There was a significant difference on the composite TNA score variable, opposite of the hypothesized direction with a small-sized effect, $t(118) = -4.571, p = 0.000, d = -0.483$. This suggested that overall self-ratings by non-supervisors tended to indicate higher training needs compared to ratings by non-supervisors of supervisors' needs.

Parks and Recreation. Within the Parks and Recreation department, only 1 of 22 (5%) TNA competencies exhibited significant mean differences in rating levels. The results indicated that for the one competency with a significant mean differences ('Goal Setting'), non-supervisors' ratings of their own training needs were significantly lower than non-supervisors' ratings of supervisors' training needs, which was in line with the hypothesized direction. The

effect of this difference was small ($d = 0.344$). There was no significant difference on the composite TNA score variable, $t(92) = -0.042$, $p = 0.473$, $d = -0.042$. This suggested that overall there was no difference between self-ratings of training needs by non-supervisors compared to ratings by non-supervisors of supervisors' training needs.

Public Works. Within the Public Works department, only 1 of 22 TNA competencies exhibited significant mean differences in rating levels. The results indicated that for the one TNA competency with a significant mean difference ('Customer Service'), non-supervisors' ratings of their own training needs were significantly higher than non-supervisors' ratings of supervisors' training needs, which was counter to the prediction made by Hypothesis 2b. There was no significant difference on the composite TNA score variable, $t(130) = -1.131$, $p = 0.260$, $d = -0.126$. This suggested that overall self-ratings of training needs by non-supervisors did not differ significantly compared to ratings by non-supervisors of supervisors' training needs.

Table 10

Hypothesis 2b: Paired Samples Mean Difference Significance Testing and Effect Sizes Between Non-supervisor Training Needs Ratings of Supervisors and Non-supervisor Training Needs Ratings of Self

TNA Competency

Basic Computer Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d [a]	95% CI [b] Lower	95% CI [b] Upper
All Departments	2.323 (1.408)	1.426 (1.081)	15.189	687	.000	0.667	0.558	0.775
Human Services	1.975 (1.279)	1.000 (0.000)	8.316	118	.000	1.078	0.806	1.350
Parks and Recreation	2.538 (1.348)	2.312 (1.422)	1.182	92	.240	0.253	-0.035	0.542
Public Works	2.687 (1.473)	2.244 (1.66)	3.035	130	.003	0.285	0.042	0.529

Bullying & Workplace Harassment

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.526 (1.454)	2.430 (1.426)	1.455	687	.146	0.048	-0.058	0.154
Human Services	2.437 (1.522)	2.244 (1.378)	1.128	118	.262	0.080	-0.174	0.334
Parks and Recreation	2.892 (1.402)	2.462 (1.348)	3.009	92	.003	0.233	-0.055	0.522
Public Works	2.824 (1.506)	2.573 (1.504)	1.883	130	.062	0.150	-0.093	0.392

Contract Management

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper

	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.397 (1.343)	2.395 (1.373)	0.025	687	.980	0.009	-0.097	0.115
Human Services	2.017 (1.289)	2.244 (1.353)	-1.587	118	.115	-0.184	-0.439	0.071
Parks and Recreation	3.075 (1.337)	2.935 (1.309)	0.843	92	.401	0.206	-0.082	0.495
Public Works	2.809 (1.393)	2.748 (1.526)	0.417	130	.677	0.023	-0.219	0.265

Communication Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.012 (1.466)	2.660 (1.502)	4.887	687	.000	0.218	0.112	0.324
Human Services	2.866 (1.583)	2.412 (1.537)	2.466	118	.015	0.291	0.036	0.546
Parks and Recreation	3.430 (1.297)	3.301 (1.275)	0.737	92	.463	0.086	-0.201	0.374
Public Works	3.214 (1.509)	3.496 (1.422)	-1.733	130	.086	-0.186	-0.428	0.057

Critical Conversations

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.977 (1.447)	3.283 (1.231)	-5.051	687	.000	-0.245	-0.351	-0.139
Human Services	2.840 (1.557)	3.160 (1.347)	-2.129	118	.035	-0.272	-0.527	-0.017
Parks and Recreation	3.226 (1.368)	3.333 (1.155)	-0.705	92	.482	-0.117	-0.405	0.171
Public Works	3.153 (1.486)	3.412 (1.318)	-1.818	130	.071	-0.202	-0.445	0.041

Customer Service

Department	Mean Non-Supervisor	Mean Non-Supervisor	t	df	p	d	95% CI Lower	95% CI Upper

	Ratings of Supervisors (SD)	Ratings of Self (SD)						
All Departments	2.571 (1.377)	3.289 (1.249)	-12.126	687	.000	-0.561	-0.669	-0.454
Human Services	2.227 (1.318)	3.336 (1.237)	-7.569	118	.000	-0.909	-1.176	-0.642
Parks and Recreation	2.978 (1.399)	3.290 (1.247)	-2.040	92	.044	-0.291	-0.579	-0.002
Public Works	2.901 (1.477)	3.359 (1.336)	-3.268	130	.001	-0.355	-0.599	-0.111

Diversity / Cultural Awareness

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.519 (1.413)	2.89 (1.362)	-6.165	687	.000	-0.293	-0.400	-0.187
Human Services	2.294 (1.349)	2.706 (1.422)	-2.813	118	.006	-0.377	-0.633	-0.120
Parks and Recreation	3.000 (1.367)	2.935 (1.258)	0.458	92	.648	0.050	-0.237	0.338
Public Works	2.733 (1.488)	3.069 (1.404)	-2.453	130	.015	-0.248	-0.491	-0.005

Dealing with Conflict

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.000 (1.44)	2.701 (1.34)	4.700	687	.000	0.196	0.090	0.302
Human Services	2.815 (1.484)	2.706 (1.336)	0.696	118	.488	0.026	-0.228	0.280
Parks and Recreation	3.247 (1.291)	3.172 (1.212)	0.524	92	.601	0.039	-0.248	0.327
Public Works	3.137 (1.456)	2.832 (1.404)	2.067	130	.041	0.175	-0.068	0.417

Goal Setting

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.748 (1.027)	3.482 (1.133)	4.374	360	.000	0.246	0.100	0.392
Human Services	3.878 (1.148)	3.531 (1.157)	1.968	48	.055	0.301	-0.097	0.699
Parks and Recreation	3.858 (0.941)	3.491 (1.181)	3.370	105	.001	0.344	0.073	0.615
Public Works	3.700 (1.088)	3.333 (1.213)	1.779	29	.086	0.319	-0.191	0.828

Handling Angry / Upset Customers

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.602 (1.374)	3.078 (1.297)	-8.226	687	.000	-0.378	-0.485	-0.271
Human Services	2.269 (1.300)	3.109 (1.294)	-6.129	118	.000	-0.681	-0.942	-0.419
Parks and Recreation	3.043 (1.318)	3.376 (1.179)	-2.188	92	.031	-0.300	-0.589	-0.011
Public Works	2.954 (1.498)	2.985 (1.359)	-0.213	130	.832	-0.062	-0.304	0.181

Human Resources Policies & Procedures

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.782 (1.420)	3.077 (1.295)	-4.870	687	.000	-0.503	0.395	0.610
Human Services	2.395 (1.457)	2.95 (1.377)	-3.761	118	.000	-0.427	-0.684	-0.170
Parks and Recreation	3.161 (1.354)	3.204 (1.247)	-0.309	92	.758	-0.002	-0.290	0.285

Public Works	3.031 (1.430)	3.229 (1.351)	-1.415	130	.159	-0.185	-0.428	0.057

Leadership Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.010 (1.475)	3.160 (1.315)	-2.290	687	.022	-0.112	-0.218	-0.007
Human Services	2.773 (1.543)	3.227 (1.324)	-2.980	118	.003	-0.328	-0.583	-0.072
Parks and Recreation	3.333 (1.330)	3.505 (1.203)	-1.151	92	.253	-0.101	-0.389	0.187
Public Works	3.237 (1.543)	3.336 (1.379)	-0.654	130	.514	-0.083	-0.326	0.159

Managing Change

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.801 (1.424)	3.408 (1.269)	-9.513	687	.000	-0.447	-0.554	-0.340
Human Services	2.555 (1.400)	3.622 (1.269)	-7.357	118	.000	-0.835	-1.100	-0.570
Parks and Recreation	3.258 (1.318)	3.387 (1.207)	-0.954	92	.342	-0.057	-0.344	0.231
Public Works	3.053 (1.541)	3.29 (1.321)	-1.533	130	.128	-0.145	-0.387	0.098

Managing Accountability

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.855 (1.424)	2.991 (1.258)	-2.288	687	.022	-0.102	-0.208	0.004
Human Services	2.639 (1.511)	3.084 (1.338)	-2.717	118	.008	-0.355	-0.611	-0.098

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
Parks and Recreation	3.247 (1.316)	3.194 (1.173)	0.385	92	.701	0.084	-0.203	0.372
Public Works	3.015 (1.509)	2.992 (1.262)	0.162	130	.872	0.026	-0.216	0.268

Negotiation Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.731 (1.376)	2.936 (1.311)	-3.522	687	.000	-0.153	-0.258	-0.047
Human Services	2.529 (1.407)	3.008 (1.441)	-3.098	118	.002	-0.368	-0.624	-0.112
Parks and Recreation	3.269 (1.278)	3.215 (1.293)	0.374	92	.709	0.089	-0.198	0.377
Public Works	2.931 (1.500)	2.969 (1.301)	-0.263	130	.793	-0.009	-0.251	0.233

Organizational Mission, Vision, and Values

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.491 (1.378)	3.116 (1.295)	-10.321	687	.000	-0.467	-0.575	-0.360
Human Services	2.168 (1.336)	3.176 (1.351)	-7.368	118	.000	-0.761	-1.024	-0.498
Parks and Recreation	3.032 (1.363)	3.054 (1.237)	-0.155	92	.877	0.025	-0.263	0.312
Public Works	2.832 (1.484)	3.275 (1.342)	-2.792	130	.006	-0.318	-0.562	-0.074

Presentation Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.576 (1.361)	2.727 (1.292)	-2.672	687	.008	-0.134	-0.240	-0.028

Human Services	2.269 (1.345)	2.706 (1.298)	-3.334	118	.001	-0.362	-0.619	-0.106
Parks and Recreation	3.022 (1.367)	3.226 (1.243)	-1.367	92	.175	-0.084	-0.372	0.203
Public Works	2.863 (1.487)	2.855 (1.359)	0.052	130	.958	-0.027	-0.269	0.216

Problem Solving Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.751 (1.405)	3.169 (1.263)	-6.810	687	.000	-0.335	-0.441	-0.228
Human Services	2.622 (1.438)	3.176 (1.313)	-3.786	118	.000	-0.418	-0.675	-0.161
Parks and Recreation	3.129 (1.353)	3.355 (1.248)	-1.499	92	.137	-0.163	-0.451	0.125
Public Works	3.008 (1.527)	3.206 (1.293)	-1.287	130	.200	-0.184	-0.426	0.059

Project Management Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.651 (1.378)	3.185 (1.235)	-8.769	687	.000	-0.410	-0.517	-0.304
Human Services	2.227 (1.330)	3.286 (1.256)	-7.029	118	.000	-0.822	-1.086	-0.557
Parks and Recreation	3.108 (1.306)	3.387 (1.251)	-1.799	92	.075	-0.156	-0.444	0.131
Public Works	2.969 (1.509)	3.176 (1.327)	-1.381	130	.170	-0.185	-0.428	0.058

Supervisory Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper

All Departments	2.977 (1.466)	3.126 (1.375)	-2.202	687	.028	-0.117	-0.223	-0.011
Human Services	2.790 (1.529)	2.916 (1.441)	-0.674	118	.502	-0.115	-0.369	0.139
Parks and Recreation	3.333 (1.394)	3.570 (1.410)	-1.320	92	.190	-0.053	-0.340	0.235
Public Works	3.160 (1.578)	3.443 (1.308)	-1.776	130	.078	-0.206	-0.448	0.037

Team Building Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.032 (1.483)	3.215 (1.393)	-2.798	687	.005	-0.129	-0.234	-0.023
Human Services	2.891 (1.539)	3.336 (1.503)	-2.583	118	.011	-0.332	-0.588	-0.076
Parks and Recreation	3.441 (1.387)	3.538 (1.307)	-0.601	92	.550	0.009	-0.279	0.296
Public Works	3.160 (1.583)	3.351 (1.370)	-1.236	130	.219	-0.139	-0.382	0.103

Technical Skills

Department	Mean Non-Supervisor Ratings of Supervisors (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.600 (1.372)	3.297 (1.288)	-11.130	687	.000	-0.528	-0.635	-0.420
Human Services	2.210 (1.407)	3.319 (1.390)	-6.527	118	.000	-0.832	-1.097	-0.567
Parks and Recreation	3.108 (1.355)	3.570 (1.330)	-2.838	92	.006	-0.321	-0.610	-0.032
Public Works	2.931 (1.479)	3.366 (1.296)	-2.975	130	.003	-0.298	-0.541	-0.054

Composite TNA Score

Department	Mean Non-Supervisor	Mean Non-Supervisor	t	df	p	d	95% CI Lower	95% CI Upper

	Ratings of Supervisors (SD)	Ratings of Self (SD)						
All Departments	2.720 (1.207)	2.947 (0.941)	-5.203	687	.000	-0.225	-0.331	-0.119
Human Services	2.46 (1.144)	2.919 (0.927)	-4.571	118	.000	-0.483	-0.741	-0.225
Parks and Recreation	3.137 (1.152)	3.216 (0.946)	-0.721	92	.473	-0.042	-0.329	0.246
Public Works	2.979 (1.355)	3.11 (1.061)	-1.131	130	.260	-0.126	-0.368	0.117

Note. Sample sizes (Non-Supervisors): All Departments (688), Human Services (119), Parks and Recreation (93), Public Works (131). All reported analyses assumed unequal variance based on the assumption that the variances between two samples in a paired samples t-test are not equal.

[a]Cohen's D.
[b]Confidence Interval for Effect Size.

Results for Hypothesis 3. Hypothesis 3 examined the effects of job position on TNA ratings and was tested with a series of independent samples t-tests. Specifically, it was predicted that supervisors would report a greater need for training for themselves on the 14 TNA competencies with managerial relevance (see Table 2) than non-supervisors. Table 11 displays means, standard deviations, mean difference significant testing, and effect sizes for each TNA competency item and a composite TNA competency variable, representing a summary statistic of all TNA competency items, for Hypothesis 3.

All departments. Across all departments, 6 of 14 (43%) TNA competencies with managerial relevance exhibited significant mean differences in rating levels between supervisors and non-supervisors. For all but one of the significant differences ('Human Resources Policies & Procedures'), supervisors' ratings of their own training needs were significantly higher than non-supervisors' ratings of their own training needs on TNA competencies with managerial relevance, which was in line with the predictions made by Hypothesis 3. There was not a significant difference on the composite TNA variable, representing a summary of TNA ratings

across the competencies most relevant to supervisors, $t(897) = 2.768$, $p = 0.006$, $d = 0.161$. This suggested that overall self-ratings of training needs by supervisors did not exhibit a greater need for training on TNA competencies with managerial relevance compared to self-ratings by non-supervisors. Effect sizes of the five TNA competencies with hypothesized differences were all small, ranging from $d = 0.213$ ('Supervisory Skills') to $d = 0.292$ ('Team Building Skills').

Human Services. Within the Human Services department, only one of 14 (7%) TNA competencies with managerial relevance exhibited significant mean differences in rating levels between supervisors and non-supervisors. For the one TNA competency('Human Resources Policies & Procedures') with a significant mean difference, supervisors' ratings of their own training needs were significantly lower than non-supervisors' ratings of their own training needs, which was opposite of the hypothesized direction. There was not a significant difference on the composite TNA variable, $t(188) = 0.896$, $p = 0.371$, $d = 0.141$. This suggested that overall self-ratings of training needs by supervisors did not differ significantly compared to self-ratings by non-supervisors on TNA competencies with managerial relevance.

Parks and Recreations. Regarding Hypothesis 3 within the Parks and Recreation department, 0 of 14 (0%) TNA competencies with managerial relevance exhibited a significant mean difference in rating levels between supervisors and non-supervisors. Accordingly, there was not a significant difference on the composite TNA variable, $t(203) = 0.711$, $p = 0.711$, $d = 0.052$. This suggested that overall self-ratings of training needs by supervisors did not differ significantly compared to self-ratings by non-supervisors on TNA competencies with managerial relevance.

Public Works. Regarding Hypothesis 3 within the Public Works department, 0 of the 14 (0%) TNA competencies with managerial relevance exhibited a significant mean difference in

rating levels between supervisors and non-supervisors. Accordingly, there was not a significant difference on the composite TNA variable, $t(185) = 0.497$, $p = 0.620$, $d = 0.090$. This suggested that overall self-ratings of training needs by supervisors did not differ significantly compared to self-ratings by non-supervisors on TNA competencies with managerial relevance.

Table 11

Hypothesis 3: Independent Samples Mean Difference Significance Testing and Effect Sizes Between Supervisor Training Need Ratings of Self and Non-Supervisors Training Need Ratings of Self for Managerial Relevant Competencies

TNA Competency

Bullying & Workplace Harassment

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d [a]	95% CI Lower [b]	95% CI Upper [b]
All Departments	2.278 (1.296)	2.452 (1.423)	-2.122	854	0.034	-0.126	-0.246	-0.005
Human Services [c]	2.293 (1.364)	2.311 (1.410)	-0.080	188	0.937	-0.013	-0.322	0.296
Parks and Recreation	2.171 (1.127)	2.543 (1.419)	-2.048	176	0.042	-0.293	-0.569	-0.017
Public Works [c]	2.421 (1.328)	2.584 (1.462)	-0.624	185	0.533	-0.113	-0.470	0.243

Contract Management

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.374 (1.181)	2.388 (1.355)	-0.182	889	0.856	-0.011	-0.131	0.110
Human Services [c]	2.293 (1.257)	2.25 (1.344)	0.208	188	0.836	0.033	-0.276	0.341
Parks and Recreation [c]	2.495 (1.220)	2.798 (1.333)	-1.695	203	0.092	-0.238	-0.514	0.038
Public Works [c]	2.684 (1.317)	2.779 (1.479)	-0.358	185	0.720	-0.066	-0.422	0.291

Diversity / Cultural Awareness

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.025 (1.209)	2.922 (1.36)	1.337	873	0.182	0.078	-0.042	0.199
Human Services [a]	2.966 (1.256)	2.818 (1.440)	0.674	188	0.501	0.107	-0.202	0.416
Parks and Recreation [a]	3.090 (1.297)	2.947 (1.323)	0.781	203	0.436	0.109	-0.166	0.384
Public Works [a]	3.211 (1.143)	3.067 (1.379)	0.591	185	0.555	0.108	-0.249	0.464

Dealing with Conflict

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	2.753 (1.199)	2.724 (1.337)	0.370	866	0.711	0.022	-0.098	0.143
Human Services [c]	2.707 (1.228)	2.788 (1.359)	-0.389	188	0.698	-0.061	-0.370	0.247
Parks and Recreation [c]	2.928 (1.226)	3.191 (1.221)	-1.537	203	0.126	-0.215	-0.490	0.061
Public Works [c]	2.737 (1.267)	2.859 (1.390)	-0.492	185	0.623	-0.089	-0.446	0.267

Goal Setting

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.485 (1.137)	3.293 (1.238)	2.666	848	0.008	0.159	0.039	0.280
Human Services [c]	3.500 (1.158)	3.553 (1.219)	0.280	188	0.780	-0.044	-0.353	0.265
Parks and Recreation [c]	3.532 (1.182)	3.394 (1.202)	0.826	203	0.410	0.116	-0.159	0.391
Public Works [c]	3.368 (1.217)	3.221 (1.288)	0.634	185	0.527	0.115	-0.241	0.472

Human Resources Policies & Procedures

Department	Mean	Mean Non-Supervisor	t	df	p	d	95% CI Lower	95% CI Upper

	Supervisor Ratings of Self (SD)	Ratings of Self (SD)						
All Departments	2.798 (1.419)	3.207 (1.237)	-4.999	901	.000	-0.307	-0.431	-0.184
Human Services	2.400 (1.452)	3.172 (1.230)	-3.490	176	.001	-0.574	-0.893	-0.255
Parks and Recreation	3.026 (1.336)	3.327 (1.227)	-1.585	184	.115	-0.235	-0.528	0.059
Public Works	3.069 (1.417)	3.222 (1.267)	-0.592	179	.554	-0.114	-0.479	0.251

Leadership Skills

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.432 (1.090)	3.161 (1.329)	3.751	938	0.000	0.216	0.095	0.336
Human Services	3.534 (1.030)	3.235 (1.324)	1.687	138	0.094	0.241	-0.069	0.550
Parks and Recreation [c]	3.550 (1.110)	3.457 (1.224)	0.565	203	0.573	0.080	-0.195	0.355
Public Works	3.421 (1.106)	3.342 (1.399)	0.370	70	0.712	0.059	-0.298	0.415

Managing Change

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.674 (1.073)	3.393 (1.271)	4.018	914	0.000	0.232	0.112	0.353
Human Services	4.034 (0.973)	3.667 (1.252)	2.191	138	0.030	0.312	0.002	0.623
Parks and Recreation [c]	3.541 (1.142)	3.340 (1.291)	1.177	203	0.241	0.166	-0.109	0.441
Public Works [c]	3.658 (1.097)	3.221 (1.314)	1.885	185	0.061	0.343	-0.015	0.701

Managing Accountability

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments [c]	3.167 (1.162)	2.990 (1.259)	2.344	1199	0.019	0.144	0.024	0.265
Human Services [c]	3.207 (1.151)	3.144 (1.343)	0.310	188	0.757	0.049	-0.260	0.358
Parks and Recreation [c]	3.189 (1.179)	3.149 (1.154)	0.246	203	0.806	0.034	-0.240	0.309
Public Works [c]	3.132 (1.070)	2.973 (1.262)	0.711	185	0.478	0.130	-0.227	0.486

Negotiation Skills

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments [c]	3.258 (1.171)	2.932 (1.315)	4.184	1199	0.000	0.257	0.136	0.378
Human Services [c]	3.241 (1.261)	3.241 (1.261)	0.870	188	0.386	0.000	-0.309	0.309
Parks and Recreation [c]	3.270 (1.152)	3.170 (1.333)	0.577	203	0.565	0.081	-0.194	0.356
Public Works [c]	3.342 (1.122)	2.919 (1.276)	1.865	185	0.064	0.339	-0.019	0.697

Organizational Mission, Vision, and Values

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments [c]	3.242 (1.204)	3.111 (1.299)	1.693	1199	0.091	0.103	-0.017	0.224
Human Services [c]	3.207 (1.348)	3.189 (1.349)	0.082	188	0.934	0.013	-0.295	0.322
Parks and Recreation [c]	3.288 (1.123)	3.021 (1.320)	1.565	203	0.119	0.219	-0.056	0.495

Public Works [c]	3.447 (1.224)	3.248 (1.330)	0.836	185	0.404	0.152	-0.205	0.508

Project Management Skills

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments [c]	3.192 (1.158)	3.183 (1.239)	0.125	1199	0.900	0.007	-0.113	0.128
Human Services [c]	3.103 (1.150)	3.288 (1.257)	-0.955	188	0.341	-0.151	-0.460	0.158
Parks and Recreation	3.405 (1.147)	3.319 (1.362)	0.485	182	0.628	0.069	-0.206	0.344
Public Works	3.053 (1.161)	3.201 (1.284)	-0.649	185	0.517	-0.117	-0.474	0.239

Supervisory Skills

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.422 (1.166)	3.142 (1.378)	3.682	913	0.000	0.213	0.093	0.334
Human Services [c]	3.431 (1.244)	2.962 (1.454)	2.136	188	0.034	0.337	0.026	0.647
Parks and Recreation	3.532 (1.102)	3.426 (1.463)	0.577	170	0.564	0.083	-0.192	0.358
Public Works [c]	3.500 (1.331)	3.430 (1.296)	0.298	185	0.766	0.054	-0.303	0.410

Team Building Skills

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.588 (1.109)	3.209 (1.383)	5.129	955	0.000	0.292	0.171	0.413
Human Services	3.776 (1.027)	3.386 (1.460)	2.102	151	0.037	0.290	-0.020	0.600

Parks and Recreation	3.676 (1.088)	3.426 (1.332)	1.455	179	0.147	0.207	-0.068	0.483
Public Works [c]	3.553 (1.155)	3.336 (1.344)	0.913	185	0.362	0.166	-0.191	0.522

<div align="center">Composite TNA Score</div>

Department	Mean Supervisor Ratings of Self (SD)	Mean Non-Supervisor Ratings of Self (SD)	t	df	p	d	95% CI Lower	95% CI Upper
All Departments	3.150 (0.837)	3.000 (0.971)	2.768	897	0.006	0.161	0.041	0.282
Human Services [c]	3.176 (0.785)	3.047 (0.965)	0.896	188	0.371	0.141	-0.168	0.450
Parks and Recreation [c]	3.215 (0.855)	3.167 (0.991)	0.370	203	0.711	0.052	-0.223	0.327
Public Works [c]	3.197 (0.933)	3.104 (1.056)	0.497	185	0.620	0.090	-0.266	0.446

Note. Sample sizes (Supervisors / Non-Supervisors): All Departments (396 / 805), Human Services (58 / 132), Parks and Recreation (111 / 94), Public Works (38 / 149). Levene's Test for Equality of Variances was conducted and all reported analyses assumed unequal variance unless indicated otherwise.

[a]Cohen's D.
[b]Confidence Interval for Effect Size.
[c]Equal variance assumed.

Summary of Results. A summary of results for each of the three hypotheses across all departments, and within the top three most represented departments is presented in Table 12. More specifically, Table 12 depicts the number of significant differences in TNA ratings for each of the 22 TNA competencies (not including the composite TNA variable) for each hypothesis, whether those significant differences were in the hypothesized direction or not, and the number of small (.20 - .49), medium (.50 - .79), and large (greater than or equal to .80) effects (Cohen, 1992) for each hypothesized difference.

Table 12

Summary of Results: Number of Significant Findings and Magnitude of Effect Sizes for Study Hypothesis

		Frequency Statistics	Department			
			All Departments	Human Services	Parks and Recreation	Public Works
Source Effect	Hypothesis 1a	Significant Differences (Hypothesized / Not Hypothesized)	19 (3 / 16)	14 (1 / 13)	2 (2 / 0)	1 (1 / 0)
		Effect Size of Differences (Small / Medium / Large)	(1 / 0 / 1)[a]	(0 / 0 / 1)	(0 / 1 / 1)	(0 / 0 / 1)
	Hypothesis 1b	Significant Differences (Hypothesized / Not Hypothesized)	17 (17 / 0)	10 (9 / 1)	10 (10 / 0)	2 (2 / 0)
		Effect Size of Differences (Small / Medium / Large)	(10 / 3 / 4)	(0 / 6 / 3)	(5 / 6 / 0)	(0 / 2 / 0)
Target Effect	Hypothesis 2a	Significant Differences (Hypothesized / Not Hypothesized)	15 (15 / 0)	12 (11 / 1)	12 (12 / 0)	2 (2 / 0)
		Effect Size of Differences (Small / Medium / Large)	(9 / 2 / 4)	(2 / 7 / 3)	(2 / 7 / 3)	(0 / 0 / 2)
	Hypothesis 2b	Significant Differences (Hypothesized / Not Hypothesized)	15 (3 / 12)	11 (1 / 10)	1 (1 / 0)	1 (0 / 1)
		Effect Size of Differences (Small / Medium / Large)	(1 / 1 / 0)[a]	(0 / 0 / 1)	(1 / 0 / 0)	(0 / 0 / 0)
Content Validation	Hypothesis 3b[b]	Significant Differences (Hypothesized / Not Hypothesized)	6 (5 / 1)	1 (0/1)	0 (0 / 0)	0 (0 / 0)
		Effect Size of Differences (Small / Medium / Large)	(5 / 0 / 0)	(0 / 0 / 0)	(0 / 0 / 0)	(0 / 0 / 0)

[a]One effect size of the significant difference is less than 0.2.
[b]Total of 14 TNA competencies with managerial relevance.

Regarding Hypothesis 1, it was predicted that self-ascribed TNA ratings would be on average lower than the TNA ratings ascribed by someone else (i.e., a source effect). Results provided general support for the prediction made by Hypothesis 1b, but not for the prediction made by Hypothesis 1a. In other words, ratings of training needs that non-supervisors ascribed to themselves were on average lower than the ratings of training needs supervisors ascribed to non-supervisors (Hypothesis 1b). Conversely, ratings of training needs that supervisors ascribed to themselves were on average greater than the ratings of training needs non-supervisors ascribed to supervisors (Hypothesis 1a).

Regarding Hypothesis 2, it was predicted that self-ascribed TNA ratings would on average be lower than the TNA ratings ascribed to someone else (i.e., a target effect). Results provided general support for the prediction made by Hypothesis 2a, but not for the prediction made by Hypothesis 2b. In other words, ratings made by supervisors of non-supervisors' training needs were on average higher than the ratings of training needs supervisors ascribed to themselves (Hypothesis 2a). Conversely, ratings made by non-supervisors of supervisors' of training needs were on average lower than the ratings of training needs non-supervisors ascribed to themselves (Hypothesis 2b).

Regarding Hypothesis 3, it was predicted that supervisors' self-ascribed TNA ratings would be higher than non-supervisors' self-ascribed TNA ratings on competencies with managerial relevance (i.e., content validation). Results provided minimal support for the prediction made by Hypothesis 3. On average, across all departments, supervisors reported a greater need for training than non-supervisors on five of 14 (36%) of the TNA competencies with managerial relevance. However, all of these significant differences were of small magnitude

(Cohen's *d* between 0.20 – 0.49), and similar findings were not replicated within specific municipal departments.

CHAPTER VII

DISCUSSION

Previous research has shown that properly designed employee training and development programs can result in positive organizational outcomes by maximizing the talents of employees (Kraiger et al., 2014). Consequently, organizations have made increasing financial investments in employee training, with recent estimates indicating that approximately $160 billion dollars is invested annually in training programs among U.S. organizations (Miller, 2013). However, despite the significant financial investments in employee training programs, many training programs are implemented without conducting the requisite training needs assessment (TNA) to identify specific training requirements linked to individual, team, and/or organizational performance deficiencies (Ferreira & Abbad, 2013; Surface, 2012). The importance of the information obtained via a TNA cannot be overstated because the quality and type of TNA information gathered can contribute significantly to the success of training programs (Ferreira et al., 2015).

The purpose of the current study was to take a more nuanced view of the person analysis phase of a TNA (McGehee & Thayer, 1961) by examining the effects of both the source and target of TNA ratings. Additionally, this study sought to make a unique contribution to the TNA literature by examining the relevance of self-ascribed TNA ratings based on the work requirements associated with an employees' status as a supervisor or non-supervisor. Taken together, the results of the current study can enhance the utility of the pre-assessment TNA phase (Surface, 2012) by providing practitioners with evidence-based information regarding the measurement of training needs, and the extent to which self-ascribed TNA ratings reflect relevant aspects of one's job.

There are three important contributions provided by the results of this study. First, ratings of training needs obtained from different sources of the same target suggested different mean levels of training needs. More specifically, non-supervisors tended to report, on average, lower levels of training needs for themselves in comparison with the training need ratings supervisors provided for their subordinates. Conversely, supervisors tended to report, on average, higher levels of training needs for themselves in comparison to the ratings of training needs non-supervisors provided for their supervisors.

Second, ratings of training needs employees provided for themselves systematically differed from the ratings of training needs provided for someone else, although how the ratings differed seemed to be contingent on an employees' status as a supervisor or non-supervisor. For example, supervisors were more likely to report, on average, greater training needs for their subordinates than for themselves, whereas non-supervisors were more likely to report, on average, greater training needs for themselves than for their supervisors.

Third, the results from the current study suggested that self-ascribed TNA ratings on competencies most closely associated with leadership and supervisory roles could be differentiated based on employees' status as a supervisor or non-supervisor. This provides some content validity evidence and justification for the use of self-ascribed TNA ratings to capture training needs relevant to employees' work requirements and offers a potential fruitful avenue for future research, which is discussed in further detail below.

DISCUSSION OF RESULTS FOR HYPOTHESES 1 AND 2

Results for source effects. The first set of hypotheses in the current study examined the potential effects of the source of TNA ratings on their mean levels. More specifically, Hypotheses 1a and 1b predicted that the TNA ratings supervisors (H1a) or non-supervisors

(H1b) ascribed to themselves would be significantly lower than the TNA ratings non-supervisors ascribed to supervisors (H1a) or supervisors ascribed to non-supervisors (H1b). Both Hypotheses (1a and 1b) were tested using data from employees across all municipal departments, as well as within the three most represented municipal departments: Human Services, Parks and Recreation, and Public Works.

Results based on the data from the full sample (i.e., all municipal departments), as well as data from the three most represented departments (i.e., Human Services, Parks and Recreation, and Public Works) indicated that Hypothesis 1a was largely unsupported. Moreover, majority of the mean comparisons using the full sample were significant, including the composite variable, which exhibited a medium effect, but most of the significant mean differences were in the opposite direction to what was hypothesized. In other words, supervisors' ratings of their own training needs tended to be higher than non-supervisors' ratings of their supervisors' training needs. These unexpected findings may be specific to and characteristic of certain departments and work environments because they were closely replicated in the sample from the Human Services department, but not in the samples from the Parks and Recreation and Public Works departments.

The lack of significant differences, albeit opposite of the hypothesized direction, could potentially be the result of the different quality of the supervisor-subordinate relationships within the Parks and Recreation and Public Works departments. Kim and Organ (1982) suggest that supervisors are likely to benefit more from establishing high-quality relationships with more competent subordinates. If this is the case (that subordinates in these departments are more competent than in other departments), then supervisors within these departments would presumably develop greater relationships with their subordinates and seek more contributions

from them. As a result of this potential higher quality relationship, it is reasonable to assume that subordinates would have a greater understanding of their supervisors' training needs and feel more comfortable identifying the training needs of their supervisors. Therefore, supervisors' self-ascribed TNA ratings would not be systematically different from the TNA ratings non-supervisors ascribed to their supervisors, which are what the results revealed. However, because supervisor – subordinate relationship quality was not directly measured in the current study, this potential explanation is only conjectural.

There are a few possible explanations for why Hypothesis 1a failed to receive support. First, it may be that non-supervisors were simply less aware of the training needs of their supervisors compared to their own training needs, thus resulting in higher TNA ratings for themselves than for their supervisors (Kraiger & Culbertson, 2013). Second, although responses to the TNA were kept confidential, non-supervisors might have been apprehensive to indicate that their supervisors needed training, because identifying training needs can be perceived as akin to acknowledging performance deficiencies (Surface, 2012). Third, supervisors may be less motivated to underreport their own training needs because of their position in the organizational hierarchy and may even perceive identifying their own training needs a form of commitment to the organization (Yousef, 1998). Finally, there is also a possibility that non-supervisors had greater needs for training than supervisors.

On the other hand, Hypothesis 1b was largely supported in the results from the full sample as most of the TNA competencies exhibited significant differences in the hypothesized direction, without any significant differences opposite to the hypothesized direction. There was also a significant difference in the hypothesized direction with a medium-sized effect on the composite TNA variable, providing further support for Hypothesis 1b. Similar results were found

when the data from the Human Services and Parks and Recreation departments were analyzed.

Reminiscent of the department-specific trends revealed by Hypothesis 1a analyses, most of the

Hypothesis 1b significant mean differences that were discovered while analyzing the full data

set, as well as the data from the Human Services and Parks and Recreation departments, were not

found when analyzing the data from the Public Works department.

These findings were generally consistent with the three studies that previously examined

the effects of rating source on TNA ratings by comparing subordinate self-ratings with ratings

ascribed to them by their supervisor (Arnold & Davey, 1992; McEnery & McEnery, 1987; Staley

& Shockley – Zalabak, 1986). Similar to these previous studies, the results of the current study

revealed that the TNA ratings supervisors ascribed to their subordinates were generally

indicative of greater needs for training than the TNA ratings non-supervisors ascribed to

themselves. This suggests a disagreement between supervisors and non-supervisors in terms of

perceptions of non-supervisors' needs for training. An explanation for this finding that has been

offered in previous research is that non-supervisors might have underreported their own need for

training because identifying a need for training can be perceived as acknowledging performance

deficiencies (Surface, 2012), and thus non-supervisors might have been motivated to present

themselves favorably (McEnery & McEnery, 1987). Another explanation for these differences

could be that supervisors hold higher performance expectations for their subordinates than the

subordinates do for themselves. Previous research has suggested that supervisors' expectations of

their subordinates were positively related to the provision of training opportunities (Wayne,

Shore, & Liden, 1997). In the context of the current study and how training needs were

operationalized (i.e., how much would YOUR performance improve if YOU complete this

training on the following competencies…), higher performance expectations would result in greater levels of perceived training needs.

Furthermore, the finding that non-supervisor self-ascribed TNA ratings are indicative of a lesser need for training than supervisors' TNA ratings of their subordinates is also in accordance with previous research on performance appraisals, which has found that job performance ratings from different sources often represent different levels of performance proficiency (Facteau & Craig, 2001). Although Hypothesis 1b was not fully supported because the number of hypothesized significant mean differences found across all departments was not consistently found within specific department, there is still some evidence to suggest that the source of TNA ratings has an effect on the reporting of employee training needs.

Overall, it appears that the source of TNA ratings may have different effects on the mean levels of TNA ratings depending on the type of source. Based on the findings from the current study, TNA ratings obtained from supervisors of their subordinates are likely to indicate a greater need for training than the subordinates' self-ascribed TNA ratings. Alternatively, TNA ratings obtained from non-supervisors of their supervisors are likely to indicate a lesser need for training than the supervisors' self-ascribed TNA ratings. However, since performance data were not obtained as part of this study, there is no way to know for sure if the differences in TNA ratings are anything more than the result of different needs for training between sources. Taken together, the results from the current study in conjunction with previous empirical and theoretical research suggest that the source of TNA ratings need to be considered when interpreting TNA ratings obtained via a TNA survey.

Results for target effects. The second set of hypotheses in the current study examined the potential effects of the target of TNA ratings on their mean levels. More specifically,

Hypotheses 2a and 2b predicted that the TNA ratings supervisors (H2a) or non-supervisors (H2b) ascribed to themselves would be significantly lower than the TNA ratings supervisors ascribe to non-supervisors (H2a) or non-supervisors ascribe to supervisors (H2b). Both Hypotheses (2a and 2b) were tested using data from employees across all municipal departments, as well as within the three most represented municipal departments: Human Services, Parks and Recreation, and Public Works.

Results based on the data from the full sample (i.e., all municipal departments), as well as data from two of the three most represented departments (i.e., Human Services and Parks and Recreation) indicated that Hypothesis 2a was largely supported. There were also significant mean differences on the composite variables from the full sample and within the Human Services and Parks and Recreation departments. Many of the significant effects that were discovered while analyzing the entire data set as well as the data from the Human Services and Parks and Recreation departments were not found when analyzing the data within the Public Works department. Within the Public Works department, only 2 of the 22 TNA competencies analyzed had a significant mean difference, both in the hypothesized direction.

The results from Hypothesis 2a were generally consistent with previous empirical research supporting the argument for a possible self-serving bias in the form of an overarching tendency of individuals to discount their own failures when evaluating themselves, but not others (Korn et al., 2016; Kelley & Michela, 1980; Snyder et al., 1976; Mezulis et al., 2004). In the context of the current study, the TNA ratings that supervisors ascribed to themselves were on average, lower than the TNA ratings supervisors ascribed to their subordinates. One potential explanation would be that supervisors might have been at least partially motivated by a self-serving bias when rating their own training needs in comparison to the TNA ratings they

provided for their subordinates. In other words, supervisors were seemingly less likely to make external attributions to justify performance deficiencies which required training for their subordinates, and instead attributed deficient performance in their subordinates to trainable internal attributes, resulting in higher levels of training need. However, this interpretation is speculative, because attributions and bias in ratings were not directly measured in this study.

On the other hand, results based on the data from the full sample (i.e., all municipal departments), as well as data from within the Human Services department, indicated that Hypothesis 2b was largely unsupported. Moreover, the majority of the mean comparisons using the full sample were significant, including the composite variable, but most of the significant mean differences were in the opposite direction to what was hypothesized. In other words, non-supervisors' ratings of their supervisors' training needs tended to be lower than the TNA ratings non-supervisors ascribed to themselves. The results from the analysis of Hypothesis 2b are similar to the results from the analysis of Hypothesis 1a, which was also largely unsupported. Again, these unexpected findings were closely replicated in the sample from the Human Services department, but not in the samples from Parks and Recreation and Public Works departments. These findings are also inconsistent with the expected effect of a self-serving bias (Korn et al., 2016; Kelley & Michela, 1980; Snyder et al., 1976; Mezulis et al., 2004).

The findings from the current study suggested that non-supervisors tended to perceive lesser needs for training for their supervisors compared to their own training needs, whereas supervisors perceived a lesser needs for training for themselves compared to the training needs of their subordinates. It could be that non-supervisors were less familiar with an 'ideal state' of managerial performance of their supervisors, and it was more difficult for them (compared to supervisors) to conduct the pseudo gap analysis required in this study (see Appendix F for

measurement of training needs) to identify the training needs of their supervisors (Kraiger & Culbertson, 2013). Or possibly, non-supervisors did not interact enough with their supervisors to accurately assess their training needs (McEnery & McEnery, 1987; Shanock & Eisenberger, 2006; Tepper & Taylor, 2003). And again, non-supervisors may feel uncomfortable providing harsh ratings of training needs for their immediate supervisors because identifying a training need can be tantamount to acknowledging a performance deficiency (Surface, 2012). A new potential explanation, specific to the findings from the analysis of Hypothesis 2b, is that some non-supervisors might be perceiving aspirational training needs for themselves. Stated differently, the TNA ratings some non-supervisors ascribed to themselves might indicate training needs that would prepare them for a supervisory position in the future.

Overall, it appears that the target of TNA ratings may have different effects on the mean levels of TNA ratings depending on the type of target, as was the case with the source of TNA ratings (Hypotheses 1a and 1b). Based on the findings from the current study, TNA ratings obtained from supervisors of their subordinates are likely to indicate a greater need for training than TNA ratings obtained from supervisors of themselves. Alternatively, TNA ratings obtained from non-supervisors of their supervisors are likely to indicate a lesser need for training than the TNA ratings obtained from non-supervisors of themselves. However, it is important to again note that since performance data were not obtained as part of this study, there is no way to know for sure if the differences in TNA ratings are anything more than the result of different needs for training between target of ratings. Furthermore, differences in TNA ratings of different targets can also be a result of the different job requirements associated with the different target of the TNA ratings. Taken together, these results suggest that the target of TNA ratings need to be considered when interpreting TNA ratings obtained via a TNA survey.

Theoretical implications of results for Hypotheses 1 and 2. When taken together, these findings provided mixed evidence of a self-serving bias when comparing employees' self-ascribed TNA ratings with TNA ratings ascribed by other employees (Hypothesis 1; source effect) and the TNA ratings employees ascribe to other employees (Hypothesis 2; target effect). Based on the assumptions of attribution theory (Kelley & Michela, 1980), it was proposed that a self-serving bias would have an effect on the TNA ratings an individual ascribes to themselves in a way that underrepresents their actual need for training compared to the TNA ratings ascribed to them by someone else and that they ascribed to someone else.

The potential effect of a self-serving bias was most evident when non-supervisors' self-ascribed TNA ratings were compared with the TNA ratings supervisors ascribed to their subordinates. Consistently, non-supervisors rated their own training needs significantly lower than supervisors rated the training needs of their subordinates. These findings are consistent with previous empirical research on both TNA and performance appraisal ratings (Arnold & Davey, 1992; Facteau & Craig, 2001; McEnery & McEnery, 1987; Staley & Shockley – Zallabak, 1986), and demonstrated some degree of a self-serving attributional bias, such that non-supervisors felt motivated to protect their self-esteem and present themselves favorably by underreporting their training needs. As a result, actual training needs are more likely to go undiscovered (Thornton,1980). This supports the point made by Martinko and colleagues (2006) that the different types of attributions employees make are extremely relevant to core industrial-organizational topics, such as training needs assessment and development. However, a similar trend was not found when supervisors' ratings of their own training needs were compared with the training need ratings supervisors provided for their subordinates.

When examining the effect of TNA rating target, it was found that supervisors' TNA ratings of non-supervisors indicated a greater need for training, on average, than the TNA ratings supervisors ascribed to themselves. However, the opposite was not true. Non-supervisors' self-ascribed TNA ratings were actually greater than non-supervisors TNA ratings of their supervisors. This suggests that any potential effect of a self-serving bias might be superseded for non-supervisors by either an unwillingness to provide harsh TNA ratings for their supervisors and/or an unfamiliarity with supervisors' performance and 'ideal state' of managerial performance, as previously discussed. Additionally, non-supervisors might also provide aspirational TNA ratings for themselves, which again would supersede any self-serving bias. In this situation, non-supervisors would be less motivated to protect their self-esteem by minimizing training needs and more motivated to receive training that could potentially advance them in the organization. Future research should examine which alternative explanation is most likely to be the driving force behind the findings opposite of the hypothesized direction because there is some evidence to suggest that a self-serving bias might have less of an effect when employees provide TNA ratings for other employees above them in the corporate hierarchy (e.g., subordinates rating their supervisors).

On the other hand, supervisors' self-ascribed TNA ratings were on average lower than the TNA ratings supervisors ascribed to non-supervisors. This provides additional support for the potential effect of a self-serving bias, as the results suggested that supervisors are less likely to make external attributions regarding the cause of performance deficiencies when providing TNA ratings for their subordinates. Although, it is unclear the extent to which supervisors are motivated to underreport their own training needs. For example, Hypothesis 1a found supervisors' self-ascribed TNA ratings to be greater than the TNA ratings non-supervisors

ascribed to supervisors. One potential explanation for this that was previously offered is that supervisors may feel less threatened to identify their own training needs and may even perceive identifying their training needs to be a form of commitment to the organization (Yousef, 1998). If this is indeed the case, then the extent to which supervisors are motivated by a self-serving bias is still unclear.

Taken together, results from the current study are consistent with research on the presence of a self-serving bias and the potential motivation for subordinates to underreport their own TNA ratings. When these ratings are compared to the TNA ratings supervisors provided for their subordinates, the self-ratings consistently indicated a lesser need for training. This was not the case for supervisors, who were seemingly less motivated by a self-serving bias when they provided their own TNA ratings. Although the TNA ratings supervisors provided for non-supervisors were higher than the TNA ratings supervisors provided for themselves (in support of Hypothesis 2a), supervisor self-ascribed TNA ratings were generally greater than the TNA ratings non-supervisors ascribed to their supervisors (opposite of Hypothesis 1a). However, since performance data and actual training needs (versus perceived training needs) were not obtained as part of the current study, there is no way to conclusively determine if participants underreport their training needs or if they just don't need training on a particular competency.

In summary, the findings from the current study provided mix support for the presence of a self-serving bias among non-supervisors when providing TNA ratings for themselves, whereas the effect of a self-serving bias for supervisors is still unclear. Future research should explore whether supervisors are less motivated by a self-serving bias, or if non-supervisors are unwilling and/or unable to report that their supervisors have performance deficiencies that need training.

Practical implications of results for Hypotheses 1 and 2. A major part of planning a training program is deciding which sources to solicit for TNA ratings. Most often (approximately 80% of the time), organizations rely on their current employees and/or their supervisors to provide ratings of training needs (Bibby, 2001; Burton & Merrill, 1977; Noe, 2008). However, previous research has not extensively examined the ramifications of soliciting TNA ratings from these different sources (e.g., the employee vs. their supervisor), or the effect of providing TNA ratings for different targets (e.g., one's self vs. someone else). Findings from this study could be used to inform the planning of training programs during the pre-assessment phase of a TNA (Surface, 2012).

Those who advocate for using self-ratings of training needs generally believe that it is the employees themselves who are most aware of their own abilities and thus best capable of rating their own training needs (Ford & Noe, 1987; McGhee & Thayer, 1961). Conversely, those who advocate for soliciting TNA ratings from employees other than the focal employee (target of TNA ratings) generally believe that due to the increasing interpersonal nature of the work environment, other employees have valuable, unique knowledge regarding the performance of their coworkers (Fleenor et al., 2008; Ock, 2016). It is recommended that both supervisors and their subordinates be involved in the needs assessment process, a recommendation also offered by previous research (McEnery & McEnery, 1987). However, ratings obtained from different sources and of different targets need to be considered in light of the findings from the current study.

It appears that supervisors are in the best position to provide ratings of their own training needs. This is because supervisors' own TNA ratings indicated a greater need for training than the TNA ratings of supervisors obtained from their subordinates. Conversely, solely relying on

subordinates to provide TNA ratings from themselves, who may feel motivated to present a favorable image of their performance by underreporting training needs, could be problematic as training needs might go undetected. This is because non-supervisors' ratings of their own training needs were often indicative of a lesser need for training than the TNA ratings supervisors provided for their subordinates. It is important to note that TNA ratings indicating a greater need for training does not mean they are more accurate ratings of training needs. However, if a TNA is being conducted in response to a triggering event as recommended by Surface (2012), than a trainable issue has already been identified and TNA ratings indicating a greater need for training are likely to be more useful than TNA ratings that consistently indicate a lesser need for training. Furthermore, non-supervisors reported a greater need for training compared to the ratings of training need they provided for their supervisors, which suggests a potential for non-supervisors to provide TNA ratings that represent "aspirational" training needs that can prepare them for career advancement. This supports the notion that both sources of TNA ratings (supervisors and non-supervisors) should be included in the TNA process. As McEnery and McEnery (1987) point out, soliciting ratings of training needs from the employees who will be attending the subsequent training program is an important component of garnering buy-in.

Based on the rationale provided above, practitioners would be best served to obtain ratings of training need for supervisors from the supervisors themselves. Obtaining TNA ratings from supervisors' subordinates seemingly offers little practical value, as the subordinates are likely to indicate a lesser need for training for their supervisors than their supervisors' own TNA ratings. Time, effort, and potentially financial resources can be saved by simply asking supervisors for their own training needs. However, there is also evidence to suggest that ratings of training needs for employees in non-supervisory positions should be collected from both the

employees themselves, as well as their supervisors. It is important to collect self-ascribed TNA ratings to foster buy-in for the subsequent training program (McEnery & McEnery, 1987), but non-supervisors might underreport their own training needs. Practitioners should then incorporate both sets of TNA ratings to determine the training needs of non-supervisors.

DISCUSSION OF RESULTS FOR HYPOTHESIS 3

The third hypothesis examined the extent to which self-ascribed TNA ratings can be differentiated based on an employee's job position as a supervisor or non-supervisor and the associated work requirements of supervisors. More specifically, it was predicted that the 14 TNA competencies most relevant to the job requirements of supervisors would be rated higher by supervisors than non-supervisors. Hypothesis 3 was tested using data from employees across all municipal departments, as well as within the three most represented municipal departments: Human Services, Parks and Recreation, and Public Works.

Using data from the entire sample across all municipal departments, Hypothesis 3 was partially supported. A little less than half (6 of the 14) of the TNA competencies analyzed had a significant difference, with only one significant difference opposite of the hypothesized direction. There was no significant difference on the composite TNA variable, limiting the support for the prediction made by Hypothesis 3. Interestingly, most of these significant relationships that were discovered while analyzing the entire data set were not found when analyzing the data from within each municipal department. Specifically, there was only one significant difference between TNA ratings within the Human Services department, which was opposite of the hypothesized direction. There were not any significant differences within the Parks and Recreation and Public Works departments.

At best, this hypothesis received mixed support because the only meaningful significant differences were found when analyzing the data across all departments. However, of the significant findings in the hypothesized direction, two of the three TNA competencies related to 'Leading and Deciding' from Bartram's (2005) Great Eight managerial competencies ('Leadership Skills', 'Supervisory Skills') were rated significantly higher in terms of training need by supervisors than non-supervisors. One of the three TNA competencies related to 'Interacting and Presenting' ('Negotiation Skills') was also rated significantly higher in terms of training needs by supervisors than non-supervisors. Taken together, these findings suggest that to some extent self-identified training needs can be differentiated based on job position using extant managerial competency models (Bartram, 2005).

However, 8 of the 14 TNA competencies with managerial relevance were not rated significantly different between supervisors and non-supervisors. One potential reason for the lack of significant differences may be the broad competencies used to measure training needs. In the current study, the competencies were worded in very general terms (e.g., Goal Setting, Managing Change, Team Building Skills) and were applicable to many jobs, across different municipal departments. Additionally, the broad measurement of the competencies on the TNA survey might have also limited the ability to detect difference in TNA ratings between supervisors and non-supervisors. For example, participants were instructed to indicate the extent to which their job performance (versus specific aspects of their job) would improve following training on each competency in the TNA survey. Taken together, this might have contributed to the lack of significant differences in self-ascribed TNA ratings between supervisors and non-supervisors, except for the competencies that were most unambiguously related to leadership and supervision. This was done intentionally, for practical reasons from the organizational perspective, although it

might have limited the ability to differentiate ratings on the broad competencies by job position. Finally, it was also difficult to completely distinguish many of the TNA competencies using extant managerial competency taxonomies, as many of the competencies might also be relevant to employees in non-supervisor jobs, especially in the government.

Theoretical implications of results for Hypothesis 3. Previous research has provided little evidence about the validity of TNA ratings collected as part of a TNA (Ferreira et al., 2015). Hypothesis 3 sought to provide evidence for the validity of inferences made based on TNA ratings. It was proposed that supervisors and non-supervisors would report different levels of training needs on competencies most similar to the job requirements of managers, mainly because of the different responsibilities associated with different job positions (Dierdorff et al., 2009). Additionally, Ilgen and Hollenbeck (1991) suggested that a work role (e.g., supervisor) can be viewed in terms of the requirements and responsibilities associated with that role. Bartram's (2005) great eight competency model of effective managerial performance was used in the current study to determine which TNA competencies would be most relevant to employees who identified as supervisors. Based on organizational role theory (Biddle, 1986), it was expected that the different requirements of employees in supervisory positions would be salient enough to resonate in the form of differential ratings of training needs.

Findings from the analysis of Hypothesis 3 provide mixed evidence about the validity of TNA ratings collected as part of a TNA project. Perhaps the most compelling finding in support of the validity of the inferences made based on TNA ratings is that supervisors, on average, tended to report a greater need for training on 'Supervisory Skills' and 'Leadership Skills' than non-supervisors. Both competencies are relevant to employees occupying supervisory positions, so it is promising to have found different levels of training need (in the hypothesized direction)

on these particular competencies between employees who identified as supervisors and non-supervisors. In general, supervisors tended to report a greater average need for training on the TNA competencies most related to 'Leading and Deciding' from Bartram's (2005) Great Eight managerial competencies, providing some support for the validity of inferences made based on TNA results. Furthermore, supervisors also reported a greater average need for training than non-supervisors on 'Negotiation Skills,' another relevant component of supervisory jobs. These findings provide at least some support for organizational role theory, such that employees in supervisory positions can recognize that receiving training on certain competencies relevant to their work requirements as a supervisor would improve their own work performance.

However, more than half of the TNA competencies deemed to be relevant to supervisors were not rated significantly higher in terms of training need by supervisors than non-supervisors. As detailed previously, the broad nature of the competencies from the TNA survey and the general nature in which they were measured might have limited the ability to detect differences, except for the competencies most decidedly related to leadership and supervision. Additionally, non-supervisors may have felt more comfortable to report a need for training on competencies that are not directly related to their job requirements as non-supervisors. Furthermore, another explanation for these non-significant findings may have been that non-supervisors' provided aspirational training needs on these managerial relevant competencies. A need for training in these areas might equip non-supervisors to be better prepared to achieve a supervisory position in the future.

In summary, findings from the analysis of Hypothesis 3 suggested that TNA ratings can at least partially be differentiated between supervisors and non-supervisors on some of the competencies related to the job requirements of managers (e.g., 'Supervisory Skills', 'Leadership

Skills,' and 'Negotiation Skills'). Alternatively, other TNA competencies from Bartram's (2005) Great Eight taxonomy (e.g., 'Dealing with Conflict' or 'Goal Setting') were less likely to be rated significantly different by supervisors and non-supervisors. To some extent, self-ascribed TNA ratings can be differentiated based on the job position, which provided some support for the assumption of organizational role theory (Biddle, 1986). In conclusion, TNA ratings appear to reflect employees' job requirement as a supervisor across all departments, but the differences in TNA ratings are inexistence within each same municipal department.

Practical implications of results for Hypothesis 3. The findings from Hypothesis 3 suggested that supervisors perceived that more training in the areas of leading and deciding and interacting and presenting would be more beneficial to their job performance than non-supervisors. It would behoove practitioners implementing training and development programs to interpret training needs of supervisors and non-supervisors, at least somewhat, independently. These findings seemed to suggest that supervisors perceived that training on certain competencies relevant to their work requirements would result in greater performance improvements than training on the same competencies would be for non-supervisors. Without taking these differences into account, there is a potential of training non-supervisors in areas less relevant to their current work requirements, and/or failing to train supervisors in areas that they perceive to be most beneficial to their managerial work requirements.

More broadly, the findings from the analysis of self-ascribed training needs between supervisors and non-supervisors across all departments suggests that self-ascribed TNA ratings obtained via a TNA are somewhat capable of capturing job relevant training needs. The finding that supervisors reported a greater need for training than non-supervisors on some of the TNA competencies with managerial relevance provides some support for the use of self-ascribed TNA

ratings. It was suggested previously in the current study that supervisors would be best suited to provide ratings of their own training needs, based largely on the finding that non-supervisors tended to report a lesser need for training for their supervisors, than the supervisors did for themselves. The results of the analysis of Hypothesis 3 provides additional rationale for the use of supervisor self-ascribed TNA ratings to determine the training needs of supervisors.

STUDY LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

It is important to note that like all studies, this study has certain limitations which might offer avenues for future research. First, direct supervisor-subordinate dyads of TNA ratings were not recorded. Participants were asked to provide ratings of their own training needs, as well as of the training needs of their supervisors or subordinates, without any way of linking those ratings to another participant's self-ratings. This was done to ensure anonymity and improve the likelihood of capturing accurate training needs. Therefore, the effect of a self-serving attribution bias can only be inferred. Obtaining TNA ratings from direct supervisor – subordinate dyads would permit a more direct examination of the effect of a self-serving attribution bias. As a result, any conclusions made from the current study regarding TNA rating biases should be interpreted with caution.

Future research would benefit from explicitly examining direct supervisor-subordinate TNA rating dyads. Examining how TNA ratings of the same target from different sources differ would provide greater insights into the possible effect of a self-serving attribution bias in the context of TNA ratings. Previous research has only made downward comparisons, examining the difference between subordinates' self-ascribed TNA ratings and the TNA ratings supervisors ascribed to them. However, the most comprehensive examination of a self-serving bias in the context of TNA ratings can only be achieved with direct supervisor-subordinate dyads and by

comparing supervisor / subordinate self-ascribed TNA ratings with rating from their subordinate / supervisor, respectively.

Additionally, because attributions and bias in ratings were not directly measured, conclusions drawn from findings of the current study are only speculative. Future research should explicitly examine the different attributions made during the TNA rating process, and the associated biases. This can potentially be achieved in two ways. One, by including a measure of motivation to make attributions, as was done in previous research reviewed by Kelley and Michela (1980) in a TNA survey along with a measure of training needs. To date, previous research has not measured attributions simultaneously with TNA ratings, which would provide a clearer picture regarding the attributions underlying TNA ratings. Two, future researchers can adopt a mixed-methods research approach by having participants explain their thought process and rationale for ascribing TNA ratings to other employees, via open-ended questions or follow-up interviews. This would also serve to provide more information regarding the attributions underlying TNA ratings.

The survey used to collect TNA ratings in the current study did not directly assess the amount of time subordinates worked under the supervisors, or the amount of interaction the subordinates had with their supervisors for which they provided ratings of training need. This information would strengthen the ability to examine the effect of a self-serving attribution bias. The results of the current study suggested that supervisors are less likely to be motivated by a self-serving bias, as their self-ascribed TNA ratings generally indicated a greater need for training than the TNA ratings ascribed to them by their subordinates. However, it is difficult to determine if these findings, counter to the prediction made by Hypothesis 1a, are the result of supervisors not being motivated to underreport their own training needs, or if the non-supervisors

providing TNA ratings for their supervisors are simply not familiar enough with the performance of their supervisors to provide TNA ratings that would contribute to performance improvements for their supervisors.

Future research would benefit from explicitly measuring the degree of familiarity subordinates have with their supervisors' job requirements and performance. The degree of familiarity can be operationalized in multiple ways, such as the length of time a subordinate has worked with their supervisors, or the amount of interactions subordinates have with their supervisors on a daily, weekly, monthly, or even yearly basis. Perhaps it may be that the longer subordinates work with their supervisors, and/or the more subordinates interact with their supervisors, the more likely the subordinates are to have an understanding of their supervisors' training needs. It would be valuable to better understand how differences in TNA ratings ascribed to supervisors from different sources differ based on the degree of familiarity between supervisors and subordinates. Although there will always be the possibility that non-supervisors may be unwilling to indicate their full extent of their supervisors' need for training, this additional information (regarding subordinate familiarity with their supervisors) would strengthen the confidence with which conclusions can be drawn regarding the effect of a self-serving bias in the context of self-ascribed TNA ratings.

The current study was also limited in its ability to fully differentiate self-reported TNA ratings based on job position. In the current study, only those TNA competencies with managerial relevance (14 of 22) were analyzed. Although using extant managerial competency models was a useful way to determine which competencies should be rated higher by supervisors than non-supervisors, it was difficult to provide a strong rationale to hypothesize which of the

remaining TNA competencies (8 of 22) would be rated higher by non-supervisors than supervisors.

Future research can further examine the extent to which self-ascribed TNA ratings reflect training needs relevant to employees' job requirements by including competencies on a TNA survey which are hypothesized to be more relevant to non-supervisors than supervisors. This can be done including in the TNA survey more job-specific competencies based on existing job analysis data of particular non-supervisory jobs. The current study used general job competencies intended to be relatable across a large number of diverse municipal departments. However, it would be beneficial for future researchers to collect training needs data from a more homogenous sample, one in which all (or most) non-supervisors have at least a few job competencies explicitly related to their work requirements, but not to the work requirements of supervisors. This information would paint a more complete picture regarding the ability of TNA ratings obtained via a TNA to capture job relevant training needs.

CONCLUSION

Conducting a needs assessment prior to developing and implementing a training program can ensure that training objectives, content, and methods align with trainee needs and organizational goals. Results from the current study suggest that TNA ratings from different sources and of different targets should be interpreted differently. Supervisors are seemingly best suited to provide their own ratings of training needs. However, it would be advantageous for organizations to solicit training need ratings of non-supervisors from both the non-supervisors themselves and their supervisors, and then evaluate any differences in TNA ratings with organizational leadership to determine training content. This is supported by the findings from the current study suggesting that employees who identified as non-supervisors might underreport

their own needs for training, and were either unable or unwilling to identify the training needs for their supervisors. Yet, self-ascribed TNA ratings are still valuable for fostering buy-in for the subsequent training program (McEnery & McEnery, 1987), so it would be ill-advised not to inquire about non-supervisors' perceived needs for training. Furthermore, supervisors did indicate a greater need for training on some competencies more relevant to their work requirements than did non-supervisors. This provides preliminary support for the notion that employees provide ratings of training need in accordance to the requirements of their job. In summary, making considerations during the pre-assessment phase of a TNA (Surface, 2012) regarding who provides ratings of training needs, and whose training needs will be rated, will bolster utility of the data collected during a TNA . As the field of TNA research continues to grow, industrial – organizational psychology scientists and practitioners should become more aware of the nuances to be considered before investing in employee training programs.

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APPENDIX A

MEGA DIMENSIONS OF MANAGERIAL PERFORMANCE

Dimensions of Managerial Performance (Boreman & Brush, 1993)
1 Planning and organizing
2 Guiding, directing, and motivating subordinates, and providing feedback
3 Training, coaching, and developing subordinates
4 Communicating effectively and keeping others informed
5 Representing the organization to customers and the public
6 Technical proficiency
7 Administration and paperwork
8 Maintaining good working relationship
9 Coordinating subordinates and other resources to get the job done
10 Decision making / problem solving
11 Staffing
12 Persisting to reach goals
13 Handling crises and stress
14 Organizational commitment
15 Monitoring and controlling resources
16 Delegating
17 Selling / influencing
18 Collecting and interpreting data

APPENDIX B

OVERLAP BETWEEN DIFFERENT MANAGERIAL COMPETENCY MODELS

Great Eight Competencies Bartram (2005)	Mega Dimensions of Managerial Performance Boreman and Brush (1993)
1. Leading and Deciding	• Planning and organizing • Guiding, directing, and motivating subordinates, and providing feedback • Monitoring and controlling resources • Delegating
2. Supporting and Cooperating	• Training, coaching, and developing subordinates • Representing the organization to customers and the public • Maintaining good working relationship • Organizational commitment
3. Interacting and Presenting	• Communicating effectively and keeping others informed • Persisting to reach goals • Selling / influencing
4. Analyzing and interpreting	• Decision making / problem solving
5. Creating and conceptualizing	
6. Organizing and Executing	• Coordinating subordinates and other resources to get the job done
7. Adapting and coping	• Handling crises and stress
8. Enterprising and performing	• Technical proficiency • Administration and paperwork • Staffing • Collecting and interpreting data

APPENDIX C

DEFINITIONS OF THE GREAT EIGHT MANAGERIAL COMPETENCIES AND THE

CORRESPONDING TNA COMPETENCIES

Bartram (2005) Great Eight Competencies		
Competency	Definition of Competency*	Relevant Competencies from TNA
Leading and Deciding	Takes control and exercises leadership. Initiates action, gives direction, and takes responsibility.	Leadership Skills Supervisory Skills Managing Accountability
Supporting and Cooperating	Supports others and shows respect and positive regard for them in social situations. Puts people first, working effectively with individuals and teams, clients, and staff. Behaves consistently with clear personal values that complement those of the organization.	Bullying & Workplace Harassment Diversity / Cultural Awareness Organizational mission, vision, and values Team Building Skills
Interacting and Presenting	Communicates and networks effectively. Successfully persuades and influences others. Relates to others in a confident, relaxed manner	Dealing with Conflict Goal-Setting Negotiation Skills
Analyzing and interpreting	Shows evidence of clear analytical thinking. Gets to the heart of complex problems and issues. Applies own expertise effectively. Quickly takes on new technology. Communicates well in writing	Contract Management
Creating and conceptualizing	Works well in situations requiring openness to new ideas and experiences. Seeks out learning opportunities. Handles situations and problems with innovation and creativity. Thinks broadly and strategically. Supports and drives organizational change.	
Organizing and Executing	Plans ahead and works in a systematic and organized way. Follows directions and procedures. Focuses on customer satisfaction and delivers a quality service or product to the agreed standards.	Human Resource Policies & Procedures Project Management Skills
Adapting and coping	Adapts and responds well to change. Manages pressure effectively and copes well with setbacks.	Managing Change
Enterprising and performing	Focuses on results and achieving personal work objectives. Works best when work is related closely to results and the impact of personal efforts is obvious. Shows an understanding of business, commerce, and finance. Seeks opportunities for self-development and career advancement.	
*Note: Competency definitions are quoted verbatim from: Bartram, D. (2005). The great eight competencies: A criterion-centric approach to validation. *Journal of Applied Psychology, 90*(6), 1185-1203., pg. 1187.		

APPENDIX D

NUMBER OF PARTICIPANTS IN EACH DEPARTMENT

	Municipality Department	Frequency	Percent
1	Agriculture	2	0.16%
2	Budget and Management Services	4	0.31%
3	Circuit Court	3	0.24%
4	City Auditor	0	0.00%
5	City Attorney	7	0.55%
6	City Clerk	4	0.31%
7	City Manager	7	0.55%
8	Commissioner of Revenue	11	0.87%
9	Commonwealth Attorney	11	0.87%
10	Communications and Information Technology	50	3.93%
11	Convention and Visitors Bureau	28	2.20%
12	Cultural Affairs	0	0.00%
13	Economic Development	4	0.31%
14	Emergency Communications and Citizen Services	18	1.42%
15	Emergency Medical Services	13	1.02%
16	Finance	27	2.12%
17	Fire	34	2.68%
18	General Registrar	2	0.16%
19	Housing and Neighborhood Preservation	7	0.55%
20	Human Resources	10	0.79%
21	Human Services	197	15.50%
22	Juvenile Probation	2	0.16%
23	Media and Communications	0	0.00%
24	Museums and Historic Preservation	34	2.68%
25	Parks and Recreation	222	17.47%
26	Planning	17	1.34%
27	Police	64	5.04%
28	Public Health	6	0.47%
29	Public Libraries	100	7.87%
30	Public Utilities	102	8.03%
31	Public Works	211	16.60%
32	Real Estate Assessor	7	0.55%
33	Strategic Growth Area	6	0.47%
34	Sheriff	27	2.12%
35	Treasurer	6	0.47%
36	Volunteer Resources	1	0.08%
37	Voter Registrar	2	0.16%
	Total	1246	98.03%
	Missing	25	1.97%
	Grand Total	1271	100.00%

APPENDIX E

TRAINING NEEDS ASSESSMENT SURVEY COVER LETTER

Human Resources Learning and Development
Training Survey

Please complete this survey about the training offered by Human Resources Learning & Development. We want your opinion on the classes currently being offered, how we can improve the classes and other topics you are interested in. **Do NOT** put your name on the survey or the envelope – we want your answers to remain anonymous.

The survey will take less than 10 minutes and we ask you return it by **Monday May 16, 2011**.

When you are finished:
- fold the survey and put it in the **envelope provided**
- **seal** the envelope
- Place the envelope into **inner office mail** for delivery

Frequently Asked Questions

Who is conducting this survey?
The survey is being conducted by Human Resources Learning & Development. We worked with 14 City members representing 11 different departments to identify questions and construct the survey.

Why should I participate in this survey?
Every City member is being asked to complete the survey because it is for and about you! The survey will take less than 10 minutes to complete.

How will the information be used?
We will use your input to ensure we offer meaningful and useful training programs for City members. The results of the survey will be posted on the Learning & Development home page.

Will I be contacted about my answers?
No, your answers are completely anonymous. We will not track who a response is sent from so we will be unable to contact you.

Who do I contact if I have questions?
If you have questions about the purpose of the survey, please contact ███████████ in Learning & Development at ███████ or by email at █████████████.

APPENDIX F

COMPETENCIES FROM THE TRAINING NEEDS ASSESSMENT

Competencies
1. Basic Computer Skills
2. Bullying & Workplace Harassment
3. Contract Management
4. Communication Skills
5. Critical Conversations
6. Customer Service
7. Diversity / Cultural Awareness
8. Dealing with Conflict
9. Goal Setting
10. Handling Angry / Upset Customers
11. Human Resources Policies & Procedures
12. Leadership Skills
13. Managing Change
14. Managing Accountability
15. Negotiation Skills
16. Organizational Mission, Vision, and Values
17. Presentation Skills
18. Problem Solving Skills
19. Project Management Skills
20. Supervisory Skills
21. Team Building Skills
22. Technical Skills
Note: Participants were instructed to "indicate how much YOUR performance would improve if YOU completed this training:" followed by the list of competencies. Responses were recorded on a five-point scale, which ranged from 1 (*Not At All*), to 3 (*Somewhat*), to 5 (*A Great Deal*).

VITA

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EDUCATION

2013-2015	Temple University, College of Public Health, Philadelphia, PA **M.S in Exercise and Sport Psychology**, May 2015 *Advisor:* Dr. Michael Sachs *Mentor:* Dr. Crystal Harold (Fox School of Business)
2009-2013	West Virginia University, College of Physical Activity and Sport Sciences, Morgantown, WV **B.S in Sport and Exercise Psychology**, May 2013 *Advisor:* Dr. Damien Clement

PROFESSIONAL EXPERIENCE

Aug. 2018-Current	*Instructor of Record*, Introduction to Industrial - Organizational Psychology, Old Dominion University, Norfolk, VA
Sept. 2017-Current	*Research Team Project Leader,* Training Needs Assessment and Evaluation of Combat-Wounded Warriors, Combat-Wounded Coalition, Chesapeake, VA
Jan. 2016-Current	*Graduate Research Assistant*, Training Needs Assessment and Evaluation of Chief Residents, Eastern Virginia Medical School (EVMS), Norfolk, VA
2015-2018	*Graduate Teaching Assistant,* Old Dominion University, Norfolk, VA
2014-2015	*Research Analyst Intern,* Gap International, Inc., Springfield, PA
2013-2014	*Research Assistant,* The Mayor's Commission on Literacy**,** Philadelphia, PA

STUDENT GOVERNMENT

The Industrial – Organizational Psychology Student Association (IOPSA)

2018-2019	President
2017-2018	Vice President / Treasury