

THE EFFECTS OF CERTIFICATION
ON SUPERVISORY ATTITUDES
TOWARD MEDICAL
TECHNOLOGISTS

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Abstract

This study examines the effects of certification on the attitudes of supervisors towards medical technologists (MT's). Survey questionnaires were mailed to various clinical laboratories across the United States. General supervisors and departmental section heads were asked to rate on a Likert-type scale their attitudes towards certified (cMT's) vs. noncertified (ncMT's) medical technologists for the following constructs: training skills, theoretical knowledge, technical proficiency, managerial potential, and professionalism. Results indicated a more positive attitude towards cMT's ($p < .0001$). Various characteristics of the supervisors (age, sex, certification status, level of education and tenure in their organization), along with demographic information about the laboratories (size, type and location) were tested to determine their influence, if any, on attitudes toward certification. The variables which resulted in statistical significance for more positive attitude toward cMT's were; education level of the supervisor, certification status of the supervisor, and location of the laboratory. Since results indicate a more positive attitude towards cMT's, human resource professionals should support efforts aimed at obtaining a certified workforce. Also, by encouraging uniformity within the field, this study may help to unite MT's and enable the profession to strengthen itself.

Table of Contents

Introduction	1
Historical Background	2
Certification	4
Supervisors' Attitudes	7
Demographics & Supervisory Traits	9
Rationale	16
Purpose	18
Hypotheses	18
Method	19
Subjects	19
Measures	20
Instrument	21
Procedure	22
Data Analysis	22
Results	23
Tables	25
Discussion	32
References	38
Appendixes	42

The Effects of Certification on Supervisory Attitudes Toward Medical Technologists

Medical technologists (MT's) are baccalaureate level clinicians who through extensive training have gained a knowledge of the underlying principles, as well as the technical and procedural aspects, of laboratory testing. The technologist plays a critical role in communication of technical information to other health care professionals and lay persons. Management skills and training responsibilities are also part of an MT's duties.

The traditional pathway to becoming a medical technologist includes completing a four-year accredited medical technology program that includes a one year internship at area laboratories, followed by passing a validated, competency-based certification exam given by a national certifying agency. A certified MT is considered to be an expert in knowledge, technical skills, and competent performance in the field.

While certification is not legally required for working in a clinical laboratory in many states, a large number of professionals opt to become certified. Passing a certification exam enables newcomers to the field, and those with experience, to assure employers and the public that they are adequately trained and highly qualified, as noted by Trotto (1991).

A few states, such as Florida and California, require MT's to become licensed by passing a state licensing exam. In these states, there are no incentives for MT's to become nationally certified since they still have to take the licensing exam.

Many variables have played a part in allowing for nontraditional routes into the

medical technology field. These factors, combined with nonstringent personnel requirements, have resulted in a mixed variety of individuals calling themselves medical technologists.

This paper will attempt to investigate the perceptions supervisors have about their medical technologists, based upon the certification status of the MT. Do they prefer certified MT's? Do they believe that certified MT's are more competent? Do they believe that certified MT's are technically superior and more knowledgeable? Do they feel that certified MT's possess better training skills? Do they believe that certified MT's bear a higher level of professionalism?

Historical Background

There are many factors which have been implicated in the changing of attitudes towards medical technologists. These issues are political, social, economic, technological and medical. In 1983 the U.S. Government enacted the Diagnosis-Related-Groups (DRG's) Prospective-Payment-System. After the implementation of PPS, the billing system for Medicare patients became based upon the patient's diagnosis. This plan would limit the amount of reimbursement that laboratories would receive, therefore, physicians were encouraged to become conservative with the number of tests they ordered. Presumably, if the number of tests ordered decreased, the number of MT's needed to perform testing would also decrease.

A direct result of this presumption was a decrease in funding for the allied health professions educational programs. Therefore, fewer highly educated and trained graduates were being produced, resulting in a shortage of new graduates.

This same decrease in reimbursements has been the death of many small-to-medium sized, privately owned hospitals -- forcing closures, mergers with nearby hospitals, and conversions to other types of health care facilities. At the same time, Health Maintenance Organizations (HMO's), medical centers, reference laboratories, physicians office laboratories, and various types of health clinics were opening. These actions have resulted in displacements and realignments of the entire staffing patterns for all laboratory personnel.

The Health Care Financing Administration (HCFA) enacted the Clinical Laboratory Improvement Amendments of 1988 (CLIA'88) in efforts to ease the staffing shortages. It lists a set of rules determining which personnel are qualified to serve as: (a) directors, (b) technical consultants, (c) clinical consultants, and (d) testing personnel. For example, under CLIA'88, an individual with a high-school diploma or equivalent, such as a GED (general equivalency diploma), may perform moderate-complexity testing and high-complexity testing until September 1, 1997. Prior to CLIA'88 this type of testing was performed only by medical laboratory technicians (MLT's) and technologists (MT's).

CLIA'88 has had extreme social and even emotional impact upon laboratory clinicians who feel that the profession of medical technology is being destroyed. On the other hand, small labs, especially in rural areas who cannot compete with the pay and/or benefits offered at larger city hospitals, will probably benefit from being allowed to hire lesser-trained staff.

Technological advances have introduced an enormous amount of computerized instrumentation that can be operated by lesser-educated staff. However, the increasing amount of highly sophisticated methodologies along with increasing numbers of

specialized areas of testing will require more technologists that have been educated at higher degree levels (baccalaureate, masters and doctoral levels).

The current state of the economy must also be considered. Due to scaled-down health insurance policies offered by employers, people are less likely to visit their physicians with minor complaints. Others may not have any health insurance at all. Therefore, people are waiting until they become acutely ill, often at times when additional, more complex and expensive testing is required.

Also, belt-tightening activities common in many organizations today have resulted in a flattened work force. However, this smaller work-force is still expected to perform at the same level of competence. Medical technologists working in continuously understaffed facilities are plagued with little opportunity for professional growth, low respect from management and other allied health professionals, lower pay than equally educated individuals, poor working conditions, and more sophisticated increasing workloads. In addition, the profession of medical technology has been contaminated due to organization's hiring less educated individuals who have not proven themselves competent. The combination of these factors has resulted in a troubled, fragmented group, struggling to become unified.

Certification

The independent variable in this study is the certification status of the medical technologist. Benson (1991) states that:

Certification--evaluation by ones peers -- is a voluntary
standard-setting process set up by a profession. Professional

accountability requires a self-regulating group to set and maintain credible, useful standards for its members. A profession guards its standards of practice or risks their surrender to corporate or government control. (p.238)

Unfortunately for the profession of medical technology, the fragmented group of individuals who belong to it, are on the verge of losing their self-regulating status to the hands of governmental control. Much of the conflict within this profession lies in the fact that there are myriad certifying agencies; each one claiming superiority. Each certifying agency offers its own set of philosophies, requirements, and "initials" to be placed after one's name. Controversy and confusion exists over which certification to pursue.

Many employers will clearly hire only ASCP (American Society of Clinical Pathologist) certified MT's that have graduated from an accredited medical technology program, while others will hire a baccalaureate degreed biology major with no credentials or experience.

Much of the available research in this area has focused upon how certification impacts the results of proficiency testing (PT). Proficiency testing is mandated by CLIA as a method to externally evaluate the quality of a laboratory's performance. Testing personnel are given samples to analyze. These samples are not disguised, but are clearly marked as PT samples. It is possible that those analyzing the samples may use extra precautions while testing them. However, it is believed that results from these tests give an accurate account of the overall accuracy of testing done on patient samples in a given laboratory.

Two separate studies by Lunz, Castleberry, James and Stahl (1985 & 1988) attempted to show evidence that laboratories employing medical technologists certified by the Board of Registry of the American Society of Clinical Pathologists (MT[ASCP]) produce more accurate laboratory test results as measured by the College of American Pathologists proficiency tests. Results of the 1985 regional study showed that those laboratories employing only certified MT's had a mean accuracy score of 95%, while laboratories employing only noncertified MT's had a mean accuracy score of 75%. Since most labs employ some certified MT's, a second analysis was performed considering the relationship between the proportion of certified MT's and the accuracy of proficiency tests. This second analysis resulted in a positive correlation, showing an increase in accuracy of results with an increase in the number of certified MT's employed and vice versa. The results of the follow-up study by Lunz, Castleberry, James & Stahl (1988) agreed with the previous study. These results present a strong argument that staffing with qualified technologists contributes to maximizing the quality of laboratory services offered to the public.

Joyce-Nagata, Reeb, and Burch (1989) attempted to validate whether the competencies of graduates of baccalaureate degree nursing programs were as expected by nursing administrators, and whether the expected competencies were evidenced in the work setting. In summary of this study, more than half of the identified baccalaureate competencies that were expected by nursing administrators were not evidenced in nursing practice. Although this study uses nurses as it's sample, it's findings may be relevant to the current topic. Nursing is a licensed profession. Once a nurse passes his/her licensing exam,

he/she is considered competent in their field. The same applies to a medical technologist who has passed his/her certification exam.

The findings of Joyce-Nagata et al. (1989) showed a significant under-representation of baccalaureate competencies for a group of nurses that was supposedly competent. We may hypothesize that similar results could be found for a group of medical technologists, indicating that certification may not necessarily mean that the individual is competent.

Another area of research that may be relevant to the current study is the effect of one's position in an organization on behaviors. Positions are asserted to influence individual behaviors through attributes such as the level of professional training, credentials and specific job responsibilities as well as professional status. Given these characteristics, attitudes and behaviors associated with one's position in an organization may be linked to such outcomes as job performance and job satisfaction. Therefore, one may expect that the certified medical technologist, because of his/her credentials and/or professional status, may enjoy a propensity towards better job performance and increased satisfaction. Butler and Ehrlich (1991) concluded from their study that the organizational position held by a job incumbent does influence the attitudes and performance of employees because position largely determines the job demands and characteristics of the work environment experienced by the workers. They also found that the employees' relationship with his/her supervisor was an important factor in the way employees felt about their work.

Supervisors' Attitudes

The dependent variable in this study is the supervisors' attitude towards medical

technologist's based upon their certification status. The following research involves factors that have been investigated as possible influences on supervisors' attitudes of performance ratings.

A study of models of job performance ratings by Borman, White, Pulakos & Oppler evaluated measures of cognitive ability, job knowledge, task proficiency, two temperament constructs (achievement & dependability), awards, problem behavior, and supervisory ratings. Their research showed that of all of these variables, technical proficiency and ratee problem behavior had substantial direct effects on supervisory ratings. Other variables that played strong indirect roles were ratee ability, job knowledge, and dependability. These results may provide evidence that will support this authors theory that supervisors feel more positively towards certified MT's based upon the premise that certification is synonymous with technical proficiency and job knowledge.

Another factor shown to influence supervisors' attitudes about performance is the similarity between the supervisor and subordinate. Past research has assumed that a person perceived as similar is more attractive and that this attraction positively biases evaluation. Turban and Jones (1988) identified and researched three types of similarities. The types are: (a) perceived similarity between the evaluator and another person, (b) similarity of supervisors' and subordinates' perceptions about aspects of the work environment, and (c) actual or demographic similarity. The results of this study provide an alternative explanation to past research. They found that subordinates who perceived the supervisor as similar to themselves and those whom the supervisor perceived as similar reported less role ambiguity, more confidence and trust in the supervisor, and greater influence over the

supervisor. If perceived similarity led to a more positive working relationship with the supervisor that produced greater insight into what is important in receiving a higher evaluation, insight (rather than bias) might have led to higher performance ratings (Turban & Jones, 1988, p.233).

The effects of job candidates being "hard-" versus "easy-to-get" on employment decisions was studied by Williams, Radefeld, Benning and Sudak (1993). Being "hard-to-get" meant that the job candidate was considering other job opportunities. This fact in itself can be interpreted by the prospective employer to mean that other employers felt that this candidate possessed superior qualifications. The results of their study confirmed that "being 'hard-to-get', worked in the candidate's favor only when it provides the interviewer with information about the candidate's qualifications", (p.177).

A second analysis in their study considered grade point average (GPA) with respect to interviewers' feelings about the candidate's qualifications. The researchers found that being "hard-to-get" was helpful to candidates who also were qualified. These results were consistent with other research (Kinicki & Lockwood, 1985) indicating the powerful effects of GPA on recruiter ratings of candidates.

Since certified MT's are generally harder-to-get than noncertified, it follows that the certified MT's may be evaluated more favorably. Also, if one believes that GPA is an indicator of the type of MT that pursues certification; with smarter tech's passing their certification exams and vice versa, again, the certified MT's are at an advantage for employment decisions.

Demographics and Supervisory Traits

Other variables that may have an effect upon the way supervisors feel about

certified versus noncertified MT's are; the demographics of the organization and traits of the supervisor. Traits of the supervisor to be considered here are their certification status, level of education, tenure in the organization, age and sex. The organizational demographics that will be considered are; the size (by number of technologists on staff), type (hospital, independent, or group) and location (rural, small city or large city) of the laboratory.

The author was unable to find any specific research about how the size, type and/or location of the organization effects supervisory attitudes about certification. It is the author's opinion that in small, rural communities qualified MT's are harder to recruit than in larger cities where a wider pool of candidates are available. It is often these rural areas that are forced to fill vacancies from a very small file of applicants, frequently hiring individuals with minimal qualifications. Therefore, supervisors in these areas will probably feel less anxious about hiring ncMT's, since these technologist's are more likely to be found on their staffs already.

The same holds true for the size of the organization (determined by the number of technologists employed). Lab's with smaller staffs often lack the budgetary means to fund large-scale recruitment efforts or to compete with higher wages and more attractive benefit packages offered by larger laboratories.

The type of laboratory often determines the level of expertise and qualifications demanded in it's technologist's. For instance, reference laboratories tend to conduct very specialized and highly complex levels of testing. These labs are likely to employ large numbers of the most highly skilled tech's available. A group practice laboratory, which

performs routine testing, will not require such high levels of skill. Hiring practices for hospital laboratories will vary greatly based upon the size, location and type of hospital.

There are no data available, that the author is aware of, on the certification status, or tenure and level of education of the supervisor--with regard to their feelings about certification. Since there is little available research on the subject of certification, the author has chosen to investigate "performance" which provides an indication of the competence of an individual.

One of the purposes of this study is to determine if the age and sex of the supervisor has any effect upon their attitudes towards certification. The available research regarding these factors has concentrated solely upon the age and sex of the subordinate, not the supervisor. This literature review will include the available research about age and sex of the subordinate since some of the findings were significant. Therefore, if age and sex (of the employee) has been shown to influence supervisors' attitudes towards employees, it is possible that age and sex of the supervisor may also have an effect.

Current trends toward an aging workforce, coupled with an increasingly litigious tendency among older workers, employers and employees alike need to be aware of the research available. Defendants in age discrimination lawsuits often cite age-related performance decrements as justification for the imposition of upper age limits in hiring and retention decisions. This argument has been supported by a widespread belief that job performance declines with increasing age. The decremental theory of aging (Giniger, Dispenzieri & Eisenberg, 1983) is based upon extensive laboratory investigations showing that abilities such as dexterity, speed of responses, agility, hearing, vision, and so forth, decline with age.

A conflicting view, one held by economists, expects experienced (hence, older) workers to be more productive. Also, empirical evidence suggests that older workers actually have lower absenteeism, turnover, illness, and accident rates, higher job satisfaction, and more positive work values than younger workers (Rhodes, 1983).

Cleveland and Shore (1992) explored the relationships among various age measures and performance. One relevant conclusion was that managers' age ratings showed a small but significant relationship to the assessments of performance given to employees. Thus, the supervisors' perceptions about the age of his/her subordinates may have an effect upon the way the supervisor views the subordinates' performance. Therefore, for our purposes, an older certified MT, may be viewed as less competent than a younger noncertified MT. Considering these results, the possibility for incongruous evaluations based upon an age bias exists.

Results from 96 independent studies on age and job performance that involved a total sample size of approximately 39,000 individuals, were analyzed by McEvoy and Cascio (1989). A meta-analysis resulted in a very small positive correlation between age and job performance. Also, results showed little evidence that the type of performance measure (supervisor rating, sales etc.) and no evidence that the type of job (professional or nonprofessional) had any notable effect upon performance.

Ferris, Yates, Gilmore and Rowland (1985) studied the influence of subordinate age on performance ratings and causal attributions such as; ability, effort, job difficulty and luck. The older subordinates tended to rate their own performance higher than did younger subordinates. However, supervisors tended to rate older subordinates'

performance lower. They found no overall relationship between supervisor performance ratings and subordinate self-ratings. However, an interesting pattern did emerge. In the 30-39 year subordinate age category, supervisors and subordinates exhibited perfect agreement in performance ratings, but this was not the case for younger or older subordinates. For the 21-29 category, supervisors tended to rate subordinates higher than they rated themselves. However, for the 40-61 category supervisors rated subordinates' performance lower than subordinates rated their own performance. Since previous studies have shown that there is no evidence of age-dependent decline in actual work performance among older workers ("Negative Perceptions", 1984), one must assume that this study shows that age discrimination seems to be operating.

The influence of rater and ratee age on six performance judgments: self-development, interpersonal skills, use of time, problem-solving, employee relations, and communication skills was studied by Cleveland and Landy (1981). The results of their study indicated that age, especially ratee age, significantly influences ratings only in the areas of self-development and interpersonal skills. However, the overall effect upon performance ratings was very small and did not seem to exert a systematic distorting influence on performance ratings.

Although some variations have been found, the majority of studies on the effects of ratee sex on performance evaluations have found a promale bias, especially when the job is traditionally male (Kalin & Hodgins, 1984; Nieva & Gutek, 1980; and Ruble & Ruble, 1982). Since stereotypes of men and women do exist, it is possible that raters bring these stereotypes into the performance appraisal situation with them.

A study by Dobbins, Cardy & Truxillo (1988) investigated the effects of purpose

of appraisal and individual differences in stereotypes on sex differences in performance ratings. The purposes of appraisal were either "experimental" or "administrative". The results indicated that individual differences in raters' stereotypes of women affect the performance evaluation of female ratees when appraisals are made for administrative decisions. Raters with traditional stereotypes of women, gave women less favorable and less accurate evaluations than do raters with nontraditional stereotypes.

Overall, the available research on sex/age and performance is limited, and the available research has shown conflicting results. However, there does seem to be the suggestion that sex/age may influence supervisors' attitudes towards the employee. Therefore it is reasonable to suspect that certification status may have an influence as well.

The level of tenure in an organization will probably reflect the attitudes held by the organization itself regarding certification status. For example, a tenured supervisor of a hospital laboratory that hires many noncertified technologists, will probably feel more comfortable towards ncMT's than a newly hired supervisor coming from a different background. This is due to management adopting organizational policies as their own.

It is expected that the higher the level of education that the supervisor has, the more positively he/she will feel about certification. Common sense tells us that an individual who values higher education and advanced educational degrees is more likely to expect those same characteristics in their own employees. Certification can be considered as a form of educational attainment. Whereas, a supervisor that has less formal education, with many years of on-the-job-training, will be less impressed with the formality of certification.

Finally, the certification status of the supervisor him/herself may influence their attitudes towards the certification status of their subordinates. Obviously, individuals that feel strongly about becoming certified themselves, will also feel strongly about their employees doing the same.

Available research suggests that supervisors' perceptions may be influenced by a number of different factors. It is the intent of this study to determine if the certification status of the medical technologist is also a factor shown to exert an influence over the attitudes of supervisors.

Although the author has discussed a few characteristics of the MT's that may effect supervisors' attitudes towards them (ex. sex and age), the only characteristic about the MT to be considered in this study is their certification status. In summary, many factors have been implicated in the historical changes in the profession of medical technology, including; political, social, economic, technological, and medical factors.

The political introduction of DRG's in 1983 directly altered the amount of reimbursement for laboratory testing and reduced funding for educational programs in the allied health professions. The HCFA enacted the CLIA'88, spelling out which personnel were qualified to work in the laboratory. This act lowered personnel requirements. The social impact upon the profession, due to this lowering of standards, has left many technologists feeling abandoned and unappreciated.

The poor economy has affected health insurance coverage, forcing people to wait until they are acutely ill before seeking medical attention, often when more complex and more expensive testing is required. New technology is allowing some previously complex instrumentation to be operated by lesser-trained individuals, while some more

sophisticated methodologies require more highly-trained MT's.

Finally, the presence of diseases such as AIDS, and the stresses associated with working in medical laboratories are also impacting the profession. A lack of uniform personnel standards, along with multiple certifying agencies, has resulted in a mixed population of individuals calling themselves medical technologists.

There does seem to be strong evidence that staffing with certified medical technologists may contribute to providing a superior quality of clinical laboratory services to the public (Lunz et al., 1985 & 1988). However, other research indicates that a baccalaureate degree and the ensuing competency may not necessarily mean the candidate is proficient (Joyce-Nagata et al., 1989). Position in the organization, credentials, and professional status has been shown to increase one's job satisfaction and performance (Butler & Ehrlich, 1991).

The results of studies on age have been conflicting. Studies on sex, tend to show a male bias, especially when the job is traditionally male, or if the rater holds traditional stereotypes of women (Kalin & Hodgins, 1984; Nieva & Gutek, 1980; and Ruple & Ruple, 1982).

Research indicates that supervisors' attitudes will be swayed more favorably based upon technical proficiency, job knowledge, similarity with the supervisor, being in demand (hard-to-get), and having a high GPA (Borman et al., 1991; Turban & Jones, 1988; Williams et al., 1993).

Rationale

The rationale for the current study is multifaceted. There are implications for

human resources, direct health care, and for the profession of medical technology itself. Human resource implications range from training opportunities and hiring decisions, to promotions.

First of all, an organization must decide whether they are going to hire only certified MT's or if they will hire both certified and noncertified. Organizational policies and job descriptions must clearly reflect their decision. If they choose the later, then they must make several HR decisions. An organization that employs both certified and noncertified should provide additional benefits, such as: educational opportunities that offer additional training to encourage noncertified MT's to attain the level of competence offered by becoming certified; and, tuition assistance to provide financial support in their endeavors.

A clear message must be sent to both groups pertaining to pay scales. Evaluation of a medical technologist's position may depend upon whether they are certified. Should one group be compensated differently than the other? This question must be addressed.

With regards to promotions and appraisals, an organization must decide if certification will be a prerequisite in order to advance in the laboratory. Currently, especially in small, rural areas, it is possible for managerial and supervisory positions to be held by individuals with less education and fewer credentials than the subordinates that work for them. This makes it difficult for HR departments to maintain consistency and fairness in their policies and practices.

The quality of health care itself may be compromised if organizations hire incompetent technologists to perform testing on patient samples. It is often the certified medical technologists who enter administrative and faculty positions as an attempt

towards career development, leaving behind the less educated, less competent technologists to perform important laboratory analysis.

The profession of medical technology itself is in serious trouble. The advent of new governmental regulations lowering personnel standards, the debate over certification versus licensure, and the confusion of multiple certifying agencies, coupled with poor job satisfaction, low pay, disrespect from other health professionals, and hazardous working conditions--it's no wonder many highly qualified professionals are leaving the field in exasperation. In conclusion, it becomes clear that a study such as this may help to provide important information that may assist in many areas -- human resources, healthcare and the profession of medical technology.

Purpose

The purpose of this study is to attempt to measure the influence of certification status on the perception of supervisors towards their MT's performance. It is expected that the supervisors' perceptions towards MT's will be influenced by supervisory traits and organizational factors.

Hypotheses

Primarily, it is expected that certification status effects the attitudes of supervisors towards medical technologists, with a more positive attitude being shown for MT's who are certified. Second, it is proposed that the supervisors' perceptions will be influenced by supervisory traits (sex, age, level of education, tenure in their organization and their own certification status) and demographics of the organization (type, size and location).

Method

Subjects

The sample consisted of individuals in supervisory positions from clinical laboratories across the continental United States. Included in this study were hospital laboratories, group practice laboratories and independent laboratories. Participants were randomly selected from a mailing list purchased from Medical Economics. A total of 5 questionnaires were sent to each of 110 selected laboratories, for a total of 555. For the purposes of this study supervisory personnel included general supervisors and departmental section heads that oversee the functioning of medical technologists.

Of the 126 returned surveys, 4 were rejected due to incomplete responses or the respondent not being a supervisor or section head, leaving a total of 122 usable surveys (response rate of 22%). The sample of 122 subjects included 36 males and 86 females. Ages ranged from < 30 to over 51, with most respondents being in the 41-50 age group. A large percentage were certified ($n=110$) as opposed to noncertified ($n=12$). Education levels varied from some college (no degree), to doctoral levels, with the largest percentage having a bachelor's degree (70%). Years employed at the organization varied from < 5 to more than 15. The largest number of responses came from hospital laboratories ($n=66$). The locations of the labs included rural (16%), small city (39%) and large city (45%). The size of the lab, based upon number of technologists employed, was evenly distributed amongst the 4 categories; < 5 (20%), 6-20 (21%), 21-50 (30%) and 51 or more (29%). Specific details about the respondents and the laboratories are summarized in Table 1 in the results section.

Measures

The dependent variable is attitude toward certification. All attitude measures on the survey utilized a 5-point Likert-type scale (1=strongly disagree through 5=strongly agree). The overall attitudes toward certified (cMT) versus noncertified (ncMT) medical technologists were based upon the summary scores of an MT Attitude Scale designed by the researcher. These summary scores were obtained by adding together all of the responses favoring the cMT's and the responses favoring the ncMT's, then dividing each score by 5 (5 questions per group), resulting in the mean score for each group (cMT's & ncMT's).

The specific constructs on the questionnaire were supervisors' attitudes towards: training skills, theoretical knowledge, professionalism, technical proficiency, proficiency testing preferences, sample analysis, competency, quality of work, dependability and managerial potential of the cMT's or ncMT's.

The independent variables in this study were sex, age, and certification status of the supervisor, level of education and years employed at the organization by the supervisor. Also included here were the type, location and size of the laboratory.

Sex was coded as male (1) and female (2). Age as < 30 (1), 31-40 (2), 41-50 (3), and 51 or over (4). Certification status coded as yes (1), no (2). Level of education was coded as high-school diploma (1), some college, (no degree) (2), associate's degree (3), bachelor's degree (4), master's degree (5) and doctoral degree (6). Tenure in the organization was coded as < 5 years (1), 5-10 years (2), 11-15 years and 15 or more years (4). The type of laboratory was coded as hospital lab (1), independent lab (2), group

practice lab (3) and other lab (4). The location of the lab was coded as rural (1), small city (population < 500,000) (2) and large city (population > 500,000) (3). The size of the organization was determined by the number of technologists on staff and was coded as follows, < 5 (1), 6-20 (2), 21-50 (3) and 51 or more (4).

Instrument

The questionnaire requested demographic information about the supervisor and about the employing laboratory. Information requested about the supervisor included: sex, age, certification status, level of education and number of years employed at their laboratory. The researcher also requested if their organization hired both cMT's and ncMT's, and if so, whether or not the respondents were aware which of their MT's were certified. They were asked to indicate their position as either supervisor, section/head or other.

Following the demographic information were the 10 statements. Half of the statements were worded showing favoritism towards cMT's, and the other half favoring ncMT's. For example, statement #11 was, "I have more confidence in training skills of cMT's"--favoring cMT's. Statement #13 was, "Professionalism is exemplified more often in ncMT's than in cMT's",--favoring ncMT's.

The validity of the MT Attitude Scale was evaluated through pretesting on a group of technologists and supervisors employed at the Olean General Hospital, Olean, New York. The participants in this pilot group were instructed to read and respond to the survey. In addition they were asked to comment about any unclear instructions, leading or threatening questions, and asked to make any suggestions that they thought would improve the survey. There were no negative responses about the instrument.

Procedure

A packet including a cover letter and 5 surveys (see Appendixes A and B) were mailed to each of the selected laboratories in August 1995 with a second mailing in November 1995. A second mailing was conducted due to the insufficient return rate of the first mailing. Also included was a preaddressed postage-paid return mail envelope to the researcher.

The cover letter stressed that all responses would be treated confidentially. It also noted that each participating organization would be able to receive a copy of the overall data if they desired, and could do so by indicating such on their response sheets.

Each packet was addressed to its corresponding laboratory manager. The researcher requested that the manager randomly select up to 5 supervisory personnel or section heads to participate, and asked that he/she confidentially enclose the responses in the return envelope addressed to the researcher. They were also asked to contact the researcher if they needed additional copies of the questionnaire.

Data Analysis

The questions referring to cMT's and ncMT's were divided into their respective groups and overall attitude scores were determined for each group. A t-test was performed on this data using the two overall summary scores to determine if there was a statistically significant difference between the attitudes towards the certified vs. noncertified medical technologists.

Subsequent analysis involved demographic information about the organization and supervisors' traits for each of the 10 questions using either t-tests, or ANOVA's with

follow up t-tests for significant F values.

T-tests were performed for each of the 10 questions for potential differences between males and females, and also between certified versus noncertified respondents. ANOVA's were performed for each of the 10 questions for the remaining independent variables; age, level of education, number of years employed, type of lab, location and size of lab.

Results

For all t-tests an alpha level of .05 was used. For the ANOVA's an alpha of .005 was considered significant. The standard alpha at which the null was rejected (.05) was divided by the number of dependent variables (10) to result in an alpha of .005. This level of significance helped to eliminate the possibility of Type I error.

A summary of the survey respondents demographics is included in Table 1 and has been discussed in the subjects section. All tables follow the results section. The results of the t-test between mean scores for supervisors attitudes towards MT's based upon the certification status of the MT is summarized in Table 2. The mean score for certified MT's was 2.438 while the mean score for noncertified MT's was 3.782. With an alpha level of .05, the attitudes of supervisors toward certified MT's versus noncertified MT's was highly significant, $t_{(242)} = -16.06$, $p < .0001$.

The t-test for potential differences by sex of the supervisor is summarized in Table 3. There were no significant findings for this variable.

The certification status of the supervisor did show significance in 6 out of 10 survey questions (see Table 4). Questions 1, 2, 7, 8 and 9 (see Appendix B) were statistically significant with an alpha $< .05$ and question 4 with an alpha $< .005$.

The remaining variables; years of employment, age and education of the supervisor, and type, location and size of the lab were all analyzed by ANOVA with follow-up t-tests where applicable. Table 5 summarizes these results. There was no statistical significance for years employed, age of supervisor, type of lab and size of lab.

Level of education did show statistical significance at the alpha .05 for question 1 ($\underline{SD} = 1.015$, $\underline{F} = 3.000$, $p = 0.021$) and question 7 ($\underline{SD} = 0.930$, $\underline{F} = 2.700$, $p = 0.034$), however, since the researcher has chosen an alpha of .005 for the ANOVA's to reduce the possibility of Type I error there were no follow-up t-tests performed for this variable.

Location of the laboratory was a statistically significant variable at the .005 level for question 5 ($\underline{SD} = 1.097$, $\underline{F} = 6.160$, $p = 0.003$). Post-hoc t-tests were calculated for the following combinations: rural versus small city ($t_{(26)} = -2.88$, $p = 0.0079$), small city versus large city ($t_{(100)} = 2.85$, $p = 0.0053$) and rural versus large city ($t_{(29)} = -1.00$, $p = 0.32$). With an alpha level of .05, rural versus small city and small city versus large city were both significant (see Table 6).

The following information was requested from the survey respondent's for informational purposes only. The results from question #19 ("Does your organization hire only certified MT's or both cMT's & ncMT's?") showed the number that hired only certified MT's was $\underline{n}=46$, while the number that hired both was $\underline{n}=76$.

Question # 20 asked if the respondent's personally knew which of their tech's were certified or not in the case where the organization hired both. The results indicated that of the 76 that hired both, $\underline{n}=58$ knew which were certified and $\underline{n}=18$ did not know.

The final question asked whether the respondent was a supervisor or section head. The results were, $\underline{n}=81$ supervisors and $\underline{n}=41$ section heads.

Table 1

Summary of Survey Demographics

<u>Supervisor Data</u>	<u>N</u>	<u>%</u>
Sex		
Male	36	29.51
Female	86	70.49
Age		
< 30	12	9.84
31-40	32	26.23
41-50	53	43.44
51 or older	25	20.49
Certification Status		
Certified	110	90.16
Non-certified	12	9.84
Level of Education		
High School diploma	0	0.00
Some College, no degree	6	4.92
Associate's degree	7	5.74
Bachelor's degree	85	69.67
Master's degree	21	17.21

continued on next page

Table 1 cont.

Summary of Survey Demographics

<u>Supervisor Data</u>	<u>N</u>	<u>%</u>
Years Employed		
< 5 years	36	29.51
5-10 years	31	25.41
11-15 years	16	13.11
15 or more years	39	31.97
<u>Laboratory Data</u>	<u>N</u>	<u>%</u>
Type		
Hospital	66	54.10
Independent	34	27.87
Group	18	14.75
Other	4	3.28
Location		
Rural	19	15.57
Small City	48	39.34
Large City	55	45.08
Size (# of technologists)		
<= 5	25	20.49
6-20	26	21.31
21-50	36	29.51
51 or more	35	28.69

Table 2

Results of T-Test Between Mean Scores of Positive Attitude for Certified versus Non-certified

Medical Technologists

<u>Certification Status</u>	<u>N</u>	<u>M</u>	<u>SD</u>
Certified	122	2.438	0.775
Non-certified	122	3.782	0.505

Note. $t_{(242)} = -16.06$, **** $p < .0001$

Table 3

Results of T-Tests for Potential Differences by Sex per Survey Question

<u>Sex</u>							
Question	<u>Female(n=86)</u>		<u>Male(n=36)</u>		<u>T</u>	<u>P</u>	<u>DF</u>
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>			
1	1.870	1.000	2.280	1.110	-1.89	0.063	60
2	1.965	0.988	1.940	1.090	0.10	0.920	60
3	3.670	1.090	3.889	0.887	-1.14	0.260	79
4	4.081	0.829	4.194	0.822	-0.69	0.490	66
5	3.010	1.200	3.278	0.974	-1.28	0.200	80
6	4.070	0.732	3.917	0.732	1.05	0.300	65
7	3.314	0.961	2.972	0.910	1.86	0.067	69
8	2.849	0.964	3.140	1.050	-1.43	0.160	61
9	3.802	0.683	3.861	0.798	-0.39	0.700	57
10	2.190	1.080	2.280	1.000	-0.45	0.650	70

Note. There were no statistically significant p values for this test.

Table 4

Results of T-Tests for Potential Differences by Certification Status of Supervisors per SurveyQuestion

Question	<u>Certification Status</u>						
	<u>Certified (n=110)</u>		<u>Noncertified (n=12)</u>		<u>T</u>	<u>P</u>	<u>DF</u>
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>			
1	1.900	0.995	2.830	1.190	-2.61	0.0230*	12
2	1.900	1.010	2.500	0.905	-2.16	0.0490*	14
3	3.770	1.060	3.417	0.669	1.63	0.1200	17
4	4.200	0.799	3.333	0.651	4.27	0.0008**	14
5	3.040	1.160	3.583	0.900	-1.94	0.0720	15
6	4.045	0.734	3.833	0.718	0.97	0.3500	13
7	3.282	0.949	2.583	0.793	2.84	0.0130*	14
8	2.880	1.010	3.417	0.669	-2.48	0.0240*	17
9	3.855	0.727	3.500	0.522	2.14	0.0480*	16
10	2.160	1.050	2.670	1.07	-1.55	0.1500	13

Note. * $p < .05$. ** $p < .005$.

Table 5

Analysis of Variance for Years Employed, Age & Education Level of Supervisor and Type,

Location & Size of Lab per Survey Question

	<u>Question</u>									
	1	2	3	4	5	6	7	8	9	10
<u>Years</u> (DF=3)										
<u>SD</u>	1.058	1.022	1.042	0.829	1.153	0.729	0.961	1.006	0.709	1.052
<u>F</u>	0.300	0.480	0.450	0.610	0.300	1.390	0.560	0.030	1.780	1.150
<u>P</u>	0.824	0.695	0.715	0.611	0.826	0.251	0.645	0.991	0.155	0.332
<u>Age</u> (DF=3)										
<u>SD</u>	1.056	1.008	1.032	0.822	1.127	0.736	0.963	0.993	0.715	1.038
<u>F</u>	0.440	1.600	1.200	1.290	2.110	0.590	0.360	1.070	1.090	2.240
<u>P</u>	0.721	0.194	0.313	0.281	0.103	0.622	0.785	0.366	0.356	0.087
<u>Education</u> (DF=4)										
<u>SD</u>	1.015	0.996	1.033	0.821	1.143	0.734	0.930	0.702	0.985	1.052
<u>F</u>	3.000	2.230	1.120	1.300	1.000	0.820	2.700	2.210	1.520	1.120
<u>P</u>	0.021*	0.070	0.351	0.276	0.410	0.514	0.034*	0.072	0.201	0.349
<u>Type</u> (DF=3)										
<u>SD</u>	1.053	1.022	1.042	0.822	1.143	0.734	0.960	1.003	0.723	1.065
<u>F</u>	0.610	0.490	0.440	1.320	0.990	0.850	0.610	0.260	0.180	0.180
<u>P</u>	0.607	0.692	0.725	0.270	0.398	0.468	0.611	0.857	0.910	0.912

continued on next page

Table 5 cont.

Analysis of Variance for Years Employed, Age & Education Level of Supervisor and Type,

Location & Size of Lab per Survey Question

		<u>Question</u>									
		1	2	3	4	5	6	7	8	9	10
<u>Location</u> (DF=2)											
<u>SD</u>		1.047	1.021	1.038	0.831	1.097	0.736	0.962	0.993	0.714	1.053
<u>F</u>		1.170	0.360	0.670	0.220	6.160	0.420	0.210	1.050	1.410	1.140
<u>P</u>		0.315	0.695	0.514	0.801	0.003**	0.659	0.810	0.353	0.248	0.322
<u>Size</u> (DF=3)											
<u>SD</u>		1.048	1.009	1.039	0.819	1.152	0.736	0.955	0.979	0.718	1.066
<u>F</u>		1.070	1.520	0.660	1.640	0.350	0.620	1.060	2.240	0.820	0.120
<u>P</u>		0.366	0.213	0.578	0.185	0.788	0.606	0.367	0.087	0.487	0.947

Note. * $p < 0.5$. ** $p < .005$.

Table 6

Summary of Post-hoc T-Tests for Location Variable

<u>Location</u>	<u>T</u>	<u>P</u>	<u>DF</u>
Rural vs. Small City	-2.88	0.0079*	26
Small City vs. Large City	2.85	0.0053*	100
Rural vs. Large City	-1.00	0.3200	29

Note. * $p < .05$.

Discussion

The results of this study are supportive of the researchers primary hypothesis, showing that supervisors have a more positive attitude towards certified medical technologists versus noncertified. These findings are consistent with the research by Lunz, Castleberry, James & Stahl (1985 & 1988). They demonstrated that staffing with cMT's (certified by the ASCP), helped to maximize laboratory services due to the relationship between the accuracy of proficiency testing and the accuracy of patient samples. Although their studies were specifically related to proficiency testing results and the proportion of cMT's to the accuracy of these results respectively, their research supports the assumption that laboratory supervisors and managers prefer to employ certified technologists as a means to increase the probability of providing the highest quality of medical testing available to the public.

The secondary hypotheses involving the demographics of the supervisor and the

organization yielded mixed results. Neither the age or sex of the supervisor showed to influence their feelings about certification. The current research looked at the age and sex of the supervisor versus the certification status of the technologist, but was not concerned with the age or sex of the technologist. The study by Dobbins, Cardy & Truxillo (1988) showed that appraisals of female employees were influenced by male raters that had traditional stereotypes towards women, therefore, it would be interesting to study the effects of sex (and possibly age) of the supervisor versus the sex (age) of the technologist as future research.

The certification status of the supervisor did prove to support the secondary hypothesis. T-tests were performed for each of the 10 statements on the survey and the following variables were statistically significant: training skills, theoretical knowledge, competence, quality of work, dependability and technical proficiencies. The constructs which failed to show any statistical significance were: professionalism, proficiency testing preferences, accuracy and management potential.

The following comments reflect the feelings of 2 survey respondents about certification: "I strongly believe that certified laboratory personnel take their profession very seriously. We know that our training prepares us to pick-up little things that an untrained person wouldn't pick up. We have been trained to see more than test tubes in blood. Life depends on what we send to the physician."

"I have more confidence in a MT that is certified because they have taken the final steps to become certified and maintain that certification. That shows self motivation, pride, ability to follow through and complete projects, and responsibility. A noncertified MT may have the same education, training, experiences and testing abilities as a certified MT; but

the actual certification and maintenance of the certification says something positive about personal worth and character, which is just as important in career situations as technical ability".

The certification status of the supervisor did influence their feelings towards that of their technologists. This was expected because supervisors that pursue and value certification for themselves are more likely to also value that same quality in their subordinates.

The level of education of the supervisor resulted in possible significance for 2 variables (training skills and competence). The data presented may reflect a true preference for cMT's in these areas, however, the level at which the null was rejected was raised to .005 due to the number of variables for the ANOVA's, therefore one cannot be completely confident that these results are without error. Again, this may be an area for future research.

The demographics of the laboratory proved to show significance for location (for question 5-proficiency testing preferences). The results of the follow-up t-tests were unexpected. Significance was shown in two categories: rural versus small city, and small city versus large city. The researcher had expected to find significance in the rural areas versus the cities. Due to the lack of certified personnel available in these rural areas, it was thought that supervisors would prefer proficiency testing to be performed by their certified tech's; assuming they were available. However, this is not what the results indicated.

A alternative explanation for this discrepancy involves a different approach to the same problem. Since rural areas and small cities have fewer cMT's available to choose

from, supervisors are unable to state a preference for cMT's since their experiences with them are limited. Also, the testing must be performed by the technologists on staff, which are more likely to be ncMT's in these areas.

Some limitations of this research should be noted. A problem frequently faced by researchers distributing their questionnaires through the mail is the limited rate of return. This low rate of return decreases the likelihood of achieving a representative sample and/or may cause the researcher to question the validity of the instrument. Two separate mailings were conducted in an attempt to eliminate this potential threat, however, the response rate was still discouraging (N=122).

Second, the instrument itself contained 10 different variables which made statistical analysis difficult. The level at which the null was rejected for the ANOVA's was increased from .05 to .005 (10 variables multiplied by .05) to avoid introducing Type I error. Therefore, some variables which may have been considered significant at the .05 level, were not accepted as significant.

Third, the sample did not include a large percentage of noncertified supervisors (10%) which may have lead to a biased selection of subjects. The reason for this is two-fold. First of all, the mailing list was obtained from Medical Economics which publishes (MLO-Medical Laboratory Observer) that employs, and has as it's intended readership, a large percentage of certified laboratorians. Also, the numbers of noncertified supervisors are very small. Therefore it would be difficult to provide a large survey of these individuals without a large scale sampling.

The implications of this study for the HR department are many. The overall preference for cMT's as reported in this study should help encourage HR professionals to

recruit and hire accordingly. In organizations that cannot staff with cMT's, their primary goal should be to encourage and provide the necessary tools and time to allow the ncMT's on their staffs to pursue additional training and continuing education programs in their field. Any organization that is willing to invest in the knowledge and development of its employees, can only benefit by the returns it will notice in the increased quality of work and satisfaction in its employees.

Should cMT's and ncMT's be compensated differently? Absolutely. The results of the current study combined with previous research by Lunz, Castleberry, James & Stahl (1985 & 1988), which indicated a positive correlation between accuracy of proficiency testing and the number of cMT's on staff, clearly indicate that cMT's are more valuable to the laboratory and should be compensated as such.

There are many paths to becoming a medical technologist. Certification is the process in which a laboratorian can prove him/herself competent in knowledge and technical skills. Obviously, a technologist with these credentials would be the more attractive candidate with regards to job promotions within an organization. The process of becoming certified and maintaining that certification, is an indication about the motivation, self-discipline and career orientation of an individual. Generally, someone who values their education and is willing to make that extra commitment towards certification would be an ideal candidate to advance on the career ladder.

In addition, legislation requiring licensure is pending in many states. An HR department that routinely sets high standards for its technologists, while encouraging and supporting efforts towards certification, will easily adapt to the transition requiring

liscensure should it become mandatory in their area.

Overall, this study has shown that supervisors prefer certified technologists.

Previous research indicates that having cMT's on staff helps to optimize laboratory services. Therefore, staffing with cMT's should be the primary goal of the HR department. By encouraging a certified workforce, the HR department externally maintains a critical role in promoting unity within the laboratory community, while at the same time, internally helping it's own organization to provide the highest quality of laboratory services available to the public.

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Appendix A

Dear Laboratory Manager,

My name is Barbara Andhor M.T. (ASCP). I am a graduate student at Ottawa University Kansas City in the Master of Human Resource Management program. I am currently working on my master's thesis and request your assistance in my endeavor.

I would greatly appreciate it if you would randomly select up to 5 laboratory supervisors/section heads from your organization and ask them to complete my survey. I have enclosed a postage-paid return envelope for the completed surveys.

If you have any questions, comments, or need extra copies of the survey, please feel free to contact me at:

(716) 375-6230 day
(716) 933-8557 evenings
(716) 375-6377 fax

64 Temple Street
Portville, New York 14770-0674

Sincerely,

Barbara Andhor M.T. (A.S.C.P.)

Appendix B

Please circle the response which best indicates the extent to which you agree or disagree with each statement. Read each statement carefully. For the purposes of this study, a laboratory certification may be from any one of the following certifying agencies:

American Association of Bioanalysts
 American Board of Clinical Chemists (ABCC)
 American Medical Technologists (AMT)
 American Society for Medical Technology National Certification Agency for
 Medical Laboratory Personnel (NCA)
 American Society of Clinical Pathologists (ASCP)
 American Society for Microbiology (ABMLI)
 International Society for Clinical Laboratory Technology Credentialing
 Commission (ISCLT)
 International Academy of Cytology (IAC)
 National Registry in Clinical Chemistry (NRCC)

1=strongly agree
 2=agree
 3=neutral
 4=disagree
 5=strongly disagree

- | | | | | | |
|--|---|---|---|---|---|
| 1. I have more confidence in the training skills of certified MT's, rather than noncertified MT's. | 1 | 2 | 3 | 4 | 5 |
| 2. The theoretical knowledge possessed by certified MT's is superior to that of noncertified MT's. | 1 | 2 | 3 | 4 | 5 |
| 3. Professionalism is exemplified more often in noncertified MT's than in certified MT's. | 1 | 2 | 3 | 4 | 5 |

12. Age
- ___ (4) 51 or over
- ___ (1) Yes
- ___ (2) No
- ___ (1) High school diploma
- ___ (4) Bachelor's degree
- ___ (5) Master's degree
13. How long have you been employed by your organization?
- ___ (1) 11-15 years
- ___ (2) 15 or more years
14. How does your organization describe the position of a research technician?
- ___ (1) Research Lab
- ___ (2) Group Practice Lab
- ___ (3) Other Lab (please specify)
- | | | | | | |
|--|---|---|---|---|---|
| 4. I believe that noncertified MT's are more technically proficient than certified MT's. | 1 | 2 | 3 | 4 | 5 |
| 5. I prefer proficiency testing to be performed by certified MT's rather than noncertified MT's. | 1 | 2 | 3 | 4 | 5 |
| 6. Sample analysis performed by noncertified MT's is more accurate than testing performed by certified MT's. | 1 | 2 | 3 | 4 | 5 |
| 7. I believe that noncertified MT's are as competent as certified MT's. | 1 | 2 | 3 | 4 | 5 |
| 8. The quality of work performed by certified MT's is superior to that of noncertified MT's. | 1 | 2 | 3 | 4 | 5 |
| 9. Noncertified MT's are more dependable than certified MT's. | 1 | 2 | 3 | 4 | 5 |
| 10. The management potential of certified MT's is greater than that of noncertified MT's. | 1 | 2 | 3 | 4 | 5 |

Please indicate the following information about yourself.

11. Sex

- ___ (1) Male
- ___ (2) Female

12. Age

- ☐ (1) < 30
☐ (2) 31-40
☐ (3) 41-50
☐ (4) 51 or over

13. Are you currently certified? If so, please state your certification(s).

- ☐ (1) Yes _____
☐ (2) No

14. What is your level of educational attainment? Please state field of your degree.

- ☐ (1) High-school diploma
☐ (2) Some college, no degree
☐ (3) Associate's degree _____
☐ (4) Bachelor's degree _____
☐ (5) Master's degree _____
☐ (6) Doctoral degree _____

15. How long have you been employed at your current organization?

- ☐ (1) < 5 years
☐ (2) 5-10 years
☐ (3) 11-15 years
☐ (4) 15 or more years

16. Which best describes your organization?

- ☐ (1) Hospital Lab
☐ (2) Independent Lab
☐ (3) Group Practice Lab
☐ (4) Other Lab (please specify) _____

17. Which best describes the location of your organization?

- ☐ (1) Rural
☐ (2) Small City (population < 500,000)
☐ (3) Large City (population > 500,000)

18. How many medical technologist's are currently on staff (full & part-time) at your organization?

- ☐ (1) < 5
- ☐ (2) 6-20
- ☐ (3) 21-50
- ☐ (4) 51 or more

19. Does your organization hire:

- ☐ (1) only certified MT's. (skip next question)
- ☐ (2) both certified and noncertified MT's.

20. If your organization hires both certified and noncertified MT's please answer the following question. Do you personally know which of your technologist's are certified and which are not?

- ☐ (1) Yes
- ☐ (2) No

21. What is your position?

- ☐ (1) Supervisor
- ☐ (2) Section/Department Head
- ☐ (3) Other _____

22. Please check here if your organization would like to receive the overall data from this survey. Each organization's results will be confidential and will be known only to the researcher. Thankyou for your participation.

Comments:

Appendix C

List of Tables

Table	Title
1	Summary of Survey Demographics
2	Results of T-Test Between Mean Scores of Positive Attitude for Certified versus Non-Certified Medical Technologists
3	Results of T-Tests for Potential Differences by Sex per Survey Question
4	Results of T-Tests for Potential Differences by Certification Status of Supervisors per Survey Question
5	Analysis of Variance for Years Employed, Age & Education Level of Supervisor and Type, Location & Size of Lab per Survey Question
6	Summary of Post-hoc T-Tests for Location Variable