

THE ACCURACY OF META-STEREOTYPES APPLIED TO CAREER AND
TECHNICAL EDUCATION

by

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Dissertation submitted to the Faculty of
Virginia Polytechnic Institute and State University in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy

in

Career and Technical Education

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May, 2004
Blacksburg, Virginia

Keywords: Stereotypes, Meta-stereotypes, Metastereotypes, Career and Technical
Education, Vocational Education

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(Abstract)

This study identified the accuracy with which local career and technical education (CTE) administrators perceive the stereotypes of CTE students, teachers, and programs held by Virginia Department of Education administrators. In order to measure the aforementioned meta-accuracy: (a) the stereotypes of CTE students, teachers, and programs held by (VDOE) administrators were determined, (b) the meta-stereotypes of local CTE administrators regarding the stereotypes of CTE programs, students, and teachers held by VDOE administrators were established, and (c) the stereotypes and the meta-stereotypes were compared.

Data analyzed revealed that some of the traditional stereotypical descriptors of CTE teachers, students, and programs were held by VDOE administrators. Some stereotypes of note were: (a) CTE students do not plan to go to college, (b) CTE students are good with concrete concepts, (c) CTE students enjoy nonacademic classes more than academic ones, (d) CTE students are not from middle to upper socioeconomic class, (e) CTE teachers have lots of on-the-job experience, and (f) CTE programs are isolated from the rest of the school.

Local CTE administrators possessed meta-stereotypes that indicated that VDOE administrators would stereotype CTE students as: (a) not being leaders in school, (b) not having college-educated parents, (c) being motivated by material rewards, (d) enjoying

nonacademic classes more than academic ones, (e) being easily influenced by peers, and (f) not being from middle to upper socio-economic class. Local CTE administrators had meta-stereotypes that indicated VDOE administrators would stereotype CTE teachers as: (a) being more of a practitioner than a theorist, (b) being good with concrete concepts, and (c) not possessing master's degrees. Local CTE administrators had meta-stereotypes that indicated VDOE administrators would stereotype CTE programs as: (a) being a good return on investment, (b) providing for the education of the whole person, (c) being beneficial to all students, (d) being expensive to maintain, (e) having enrollment typically of students from blue-collar or agriculture background, and (f) being for students who work better with their hands.

Local CTE administrators were accurately able to predict the way VDOE administrators would respond to the statements depicting stereotypes of CTE students, teachers, and programs for 45 of the 62 items. Conversely, they were not able to accurately predict 17 out of the 62 statements. Overall, the accuracy of the meta-stereotypes (meta-accuracy) of local CTE administrators varied depending upon what was being measured. The meta-accuracy in relation to CTE teachers was highest (11 out of the 12 items) and the meta-accuracy was lowest in relation to CTE programs (10 out of 17 items). In relation to CTE students, local CTE administrators were accurate in predicting 24 out of the 33 items.

Acknowledgments

I wish to express my sincere appreciation to the many individuals who offered moral support and assistance during this research effort. Special gratitude is extended to all of the members of my graduate committee who so freely provided their advice and time. I am especially grateful to the chair of my Ph.D. committee, Dr. K. Kurt Eschenmann, for his constant guidance and encouragement. Special recognition is also extended to Dr. Pat O'Reilly for lending his expertise in research methodology, particularly in the area of follow-up studies, and Dr. Daisy Stewart for her constant counsel. To Dr. Christopher Budzisz and Dr. William Price, I would like to extend my appreciation for sharing their time and knowledge. I would also like to express my gratitude to Dr. Mitchell Kaman for graciously allowing me to use his questionnaire. Hopefully, one day, I too will be surprised when someone other than the members of my committee asks me a question regarding my dissertation. I would also like to acknowledge both G. Robert Moreno and Paul Dettmann for the professional support they provided throughout my time at Virginia Tech.

Finally, I wish to thank the members of my family because without them, none of this would be possible. To my parents, my brother, my sisters, my fiancée Jessie, and my friends thank you for all of the encouragement.

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Chapter 1

Problem and Scope

Introduction

Some have argued that the greatest gift in the world would be to see ourselves as others see us. The way we, as a group, are stereotyped is a reflection of the manner in which we see ourselves as others see us. Stereotypes move beyond the perceptions of the individual to the aggregate or collective level, where a group (the ingroup) is ascribed specific characteristics or traits by another group (the outgroup). Ingroup members adapt to the outgroup's supposed perspective of the ingroup to define their own group. This is especially true when there is a concern about its evaluation by other groups (Gomez, 2003). Therefore, stereotypes are being created and reinforced by both sides of the exchange or by how the outgroup stereotypes the ingroup and by the ingroup's collective perception of how the outgroup stereotypes the ingroup. Since it is difficult to be completely cognizant of the former, reality is sometimes shaped and the ingroup is being defined by what is thought to exist, not what truly exists.

According to Combs and Syngg (1958), man behaves as man perceives, and that behavior is the same whether it is based on accurate or inaccurate perceptions. When the argument is applied to group behavior based on stereotypes it becomes even more important, because the ingroup's perceptions of the way it is stereotyped by the outgroup help define the ingroup and affect its behavior. Sigelman and Tuch (1998) ascertained that many decisions are more influenced by the ingroup's shared beliefs about the outgroup stereotypes of them than by the actual stereotypes per se. Vorauer, Main, and O'Connell (1998) found that aversion to group interaction can be more justified by the

impressions people think others have of them than by their stereotypes of the outgroup. If shared beliefs about stereotypes are constantly driving group behavior and those beliefs are clouded or inaccurate, then groups could potentially be forced away from the ideal, towards a reinforcement of the same stereotypes they might be attempting to disprove. Even when the outgroup negatively stereotypes the ingroup, if the ingroup understands and realizes those stereotypes, there remains the possibility for change on both sides of the exchange.

Meta-stereotypes and meta-accuracy applied to CTE. Providing local career and technical education administrators a better understanding of the way career and technical education (CTE) is stereotyped by other groups, particularly Virginia Department of Education administrators, would be a practical application of the previously mentioned gift. In other words, what are local CTE administrators' shared beliefs about Virginia Department of Education administrators' stereotypes of CTE and are those shared beliefs accurate? In social psychology, local CTE administrators' shared beliefs about Virginia Department of Education administrators' stereotypes of CTE are recognized as meta-stereotypes. Meta-stereotypes have four main characteristics a) a contextual component, b) a behavioral component, and c) a cognitive component, and a level of accuracy, all of which can be applied to local CTE administrators (Vorauer, Main, & O'Connell, 1998). The accuracy of meta-stereotypes, or meta-accuracy, is higher when the perception of stereotypes and the actual stereotypes coincide. If the meta-stereotypes are inaccurate (low meta-accuracy), then they have the possibility of influencing and reinforcing the stereotypes the outgroup has of the ingroup. Past research on meta-stereotypes has shown that ingroup members have the tendency to overestimate the percentage of

outgroup members who possess negative stereotypes of the ingroup and underestimate the percentage of outgroup members who possess positive stereotypes (Gomez, 2003; Vorauer et al., 1998; Sigelman & Tuch, 1997). This theory, when applied to CTE administrators, could lead to a definite problem. For instance, if CTE administrators believe that state-level educational administrators feel that CTE programs are for the academically inept, then CTE administrators might be less likely to recruit academically talented individuals; whether the aforementioned statement is true is of no consequence. Conversely, if the meta-stereotypes of CTE administrators are more accurate (high meta-accuracy), perhaps CTE administrators would be better suited to change what they view as being inaccurate or quell what they view as being negative. Once again, it is better for the ingroup to know how it is stereotyped by the outgroup, even if the stereotypes are negative, than to base behavior on inaccurate meta-stereotypes.

The contextual component of meta-stereotypes applied to CTE. Within CTE, there has been a constant assertion that outsiders have inaccurate stereotypes of CTE programs, teachers, and students and lack a basic understanding of CTE, with the former being a reflection of the latter (Gordon, 2003). Most of the inaccurate stereotypes are considered negative. Perhaps, the inaccurate stereotypes and the lack of understanding of CTE grew out of its traditional isolation from the regular school programs or general education. The differences between CTE and general education programs are real, but the differences do not make one program more valuable than the other. Still, many individuals place more value in other educational programs because they feel only these programs prepare students for college, which they consider a prerequisite to success in life. The inaccurate stereotypes associated with CTE lead to value judgments that place it

lower on the educational hierarchy and raise questions about the current role and definition of CTE (Gordon, 2003). Local CTE administrators are responsible for maintaining the definition and role of CTE. Conceivably, improving the accuracy of local CTE administrators' meta-stereotypes would allow local CTE administrators to suppress some of the misconceptions associated with CTE. This is true whether the stereotypes are positive, negative, or just reflect the unique nature of CTE.

The preconceived notions of CTE being a “dumping ground” and its students being better with their “hands” are sometimes reinforced by these somewhat negative and sometimes inaccurate classifications (Gray & Herr, 1998). However, the aforementioned stereotypes of CTE and CTE students are not necessarily negative nor are they completely inaccurate. Do the accusations of being an alternative form of education or enrolling students who possess manual dexterity require a defense? Probably not, yet the self-consciousness of local CTE administrators regarding CTE's image reflects back a very negative and ugly problem. The problem revolves around the difficulty local CTE administrators have in assessing the stereotypes others possess of CTE. According to Combs and Snygg (1959), what is perceived is not necessarily what exists, but what one believes exists. If CTE administrators are developing new programs, curriculum, and public relations campaigns based on their perception of how others feel about CTE and those perceptions are inaccurate, then the aforementioned actions could be an improper use, misallocation, or even a waste of resources. In other words, inaccurate perceptions, of local CTE administrators, can sometimes lead to less than ideal behavior.

In relation to stereotypes, some within CTE feel as though they have been cast into an inferior educational category by others, when in fact that feeling of isolation could

be a creation of both sides of the exchange. According to Pettigrew (1981), individuals tend to attribute negative acts by members of outgroups to innate characteristics while discounting positive traits as exceptional. On the other side of the exchange, the ingroup could reinforce the negative stereotypes held by others by focusing on the exceptional. This could be applied to the problem local CTE administrators have in creating more accurate stereotypes of CTE. Within CTE, there has been a tendency to identify and celebrate outstanding CTE programs as if they were exceptions to the norm. It is as though the uncelebrated CTE programs are simply living up to the old stereotypes, which the celebrated programs have broken. This raises the question of whether the inaccurate and sometimes negative stereotypes of CTE held by others are reinforced by the actions and beliefs of those within CTE. Many CTE leaders have made the claim that those involved in CTE need to “tell our story.” Perhaps if CTE leaders understood how others stereotyped CTE, telling a story would be unnecessary and outstanding CTE programs would be thought of as the norm rather than the exception.

Ingroup/ outgroup. This study will use *stereotype* to refer to the process of ascribing characteristics to groups of people based on their group memberships (e.g., CTE administrators, CTE students, or CTE). In other words, stereotypes are mental images which lump together members of groups and associate them with particular traits or attributes (Samuels, 1973). Stereotypes could lead to negative discriminatory behavior whether they are accurate or inaccurate, as long as the individuals within a group perceive the other group to have particular characteristics that are viewed as undesirable (Tajfel, 1981). When these principles are applied to the ingroup and outgroup used in this research study--CTE administrators and Virginia Department of Education

administrators--two questions come to light. The first question is whether CTE's group status is cohesive enough to allow for ingroup identification by local CTE administrators. The second question is whether Virginia Department of Education administrators are thought to be an outgroup by CTE administrators. Fundamentally, are local CTE administrators a suitable ingroup and are Virginia Department of Education administrators a suitable outgroup?

In response to the first question, there are two reasons why CTE's status would allow for ingroup identification by local CTE administrators. Within the Commonwealth of Virginia, the main local CTE administrator for each school division is responsible for all of the different CTE service areas within the division and has the authority to make decisions that could affect CTE as a whole. Because of the nature of their job, local CTE administrators are required to identify with CTE as a whole. This identification with CTE fulfills the basic requirement for considering CTE an ingroup (Schneider, 2004). Secondly, CTE receives federal funding as a whole and it is separate from the funding allocated for "traditional education," or the funding Virginia Department of Education administrators would oversee. This creates a contextual differentiation between CTE and "traditional education," which not only bolsters the argument of CTE administrators being an ingroup, but it also solidifies Virginia Department of Education administrators as an outgroup in the minds of CTE administrators.

Regarding the second question, it would be only logical to assume that Virginia Department of Education administrators evaluate CTE and associate CTE programs, students, and teachers with specific traits or attributes. It is also reasonable to assume that CTE administrators recognize that some evaluation by state-level administrators

(outgroup) regularly occurs and that there are stereotypes of CTE held by the outgroup. In order for meta-stereotypes to exist, CTE administrators are not required to accurately perceive the stereotypes, but merely understand that some stereotypes exist.

The behavioral component of meta-stereotypes applied to CTE. The behavioral component of meta-stereotypes, when the meta-stereotypes are negative, can cause selective interaction, avoidance of contact, or even hostile reactions to the outgroup (Fein & Spencer, 1987). Sigelman and Tuch (1997) have argued that meta-stereotypes, much like stereotypes themselves, can decisively shape the behavior of individuals within groups. For example, CTE students' eagerness to enroll in post-secondary programs might be more influenced by their conceptions of others' stereotypes of them than by the actual stereotypes, per se.

The cognitive component of meta-stereotypes applied to CTE. Gomez (2003) argued that individuals might come to think that they possess the stereotypes assigned to them by others; and if these traits are believed to be undesirable, the consequence could be a decrease of ingroup identification. This could be applied to CTE, as individuals involved in CTE might identify more with various subgroups, such as a specific CTE service area, if they believe others have negative stereotypes of CTE as a whole. Once again, this remains the case even if the negative stereotypes of CTE do not truly exist. Therefore, it would be beneficial to increase the accuracy of the meta-stereotypes of those involved in CTE to create more cohesion within it.

One can easily conclude that the stereotypes Virginia Department of Education administrators hold regarding CTE students, teachers, and programs can have an indirect impact on enrollments, program recognition, and the quality of students within the

program. According to the literature, the way local CTE administrators perceive the aforementioned stereotypes is equally important because meta-stereotypes have a contextual and behavioral component (Sigelman & Tuch, 1997; Rettew, Billman, & Davis, 1993). This research will not only focus on the stereotypes of CTE and the meta-stereotypes of CTE administrators, but also on the accuracy of the meta-stereotypes. Together, these questions have not been discussed in the field of CTE, even though the answers to the questions directly affect the field as a whole.

Problem Statement

The literature indicates that: (a) stereotypes directly influence the way individuals evaluate CTE programs, (b) stereotypes are related to meta-stereotypes, (c) meta-stereotypes are related to stereotypes, and (d) meta-stereotypes have a behavioral, cognitive, and contextual component. In respect to CTE, examples of stereotypes and meta-stereotypes exist that may directly impact funding levels, program existence, recruitment, and enrollments. Since the meta-stereotypes of CTE administrators have a behavioral, contextual, and cognitive dimension, they can and do have an impact on CTE programs. If programmatic behavior within the field of CTE is a function of those meta-stereotypes then their accuracy is highly significant. This study explored the meta-stereotypes local CTE administrators have regarding stereotypes of CTE students, teachers, and programs held by Virginia Department of Education administrators. It also explored the stereotypes Virginia Department of Education administrators have of CTE. Finally, it will determine the accuracy with which local CTE administrators perceive the stereotypes of CTE held by school Virginia Department of Education administrators.

Significance

If the information is utilized, the answers to the research questions may help local CTE administrators properly develop classes, curricula, and public relations campaigns. It could also allow for greater ingroup identification, which could lead to more cohesion within CTE (Gomez, 2003). If the meta-stereotypes are proven inaccurate, behavior can be altered to better respond to what actually exists, not what is believed to exist. Essentially, CTE resources could be utilized in a better manner with a higher level of meta-accuracy.

Research Questions

Specifically, the study sought to answer the following questions:

1. What are the stereotypes of CTE students, teachers, and programs held by Virginia Department of Education administrators?
2. What are the meta-stereotypes of local CTE administrators regarding the stereotypes of CTE students, teachers, and programs held by Virginia Department of Education administrators?
3. What is the accuracy of local CTE administrators' meta-stereotypes (meta-accuracy)?

Definition of Terms

The following terms were defined as they apply to this study:

Local career and technical education administrators are defined as those individuals identified by the Virginia Department of Education as being the main CTE administrator for each of the local school divisions. Furthermore, these individuals have the responsibility for signing off on the local CTE plan submitted to the Virginia

Department of Education. These individuals must have teaching experience in one of the traditional CTE service areas or at least one baccalaureate degree or higher in, or emphasis on, CTE, or a CTE-related field. For the purposes of this study, this group will be considered the ingroup.

Meta-accuracy is based on the ingroup's perceptions of the stereotypes of the ingroup held by the outgroup. The congruency between the ingroup's perceptions of the stereotypes held by the outgroup and the outgroup's stereotypes of the ingroup, determine whether meta-accuracy is present. For the purposes of this study, meta-accuracy exists under two circumstances; a) when the ingroup perceived the outgroup as having a stereotype of the ingroup, and the outgroup actually held that stereotype and b) when the ingroup perceived the outgroup as not having a particular stereotype of the ingroup, and the outgroup did not hold the stereotype.

Meta-stereotypes are an individual's beliefs regarding the stereotypes that outgroup members hold about his or her own group (Vorauer et al., 1998).

Stereotypes as they pertain to inter-group relations, are mental images which lump together members of groups and associate them with particular traits or attributes (Samuels, 1973). Brigham (1971) argued that stereotypes are made up of any traits that individuals rate as belonging to a high percentage of group members. For the purposes of this study, stereotypes were identified using a measurement technique that combined the idea of consensus, made relevant by Katz and Braly (1933), with a percentage measure that identifies perceived variability on particular group characteristics. The measurement procedures are explained in more detail in Chapter 3. As stated in Research Question 1

and Research Question 2, the stereotypes held by Virginia Department of Education Administrators were those reflected in their responses to the instrument.

Virginia Department of Education administrators are defined as those individuals identified by the Virginia Department of Education as being employed in the following divisions: Assessment and Reporting, Educational Accountability, Instruction--with the exception of the administrators working for the Office of Career and Technical Education--, Policy and Communications, Special Education and Student Services, Teacher Education and Professional Licensure, and the Superintendent. Virginia Department of Education administrators with teaching experience in one of the CTE service areas or a CTE or CTE-related degree were excluded from this group. For the purposes of this study, this group will be considered the outgroup. All administrators from the Division of Technology and the Division of Finance were excluded from this study due to the extreme technical nature of the jobs within those divisions.

It should be noted that in this study vocational education and career and technical education were used synonymously. Also, when the term career and technical education was used, it referred to secondary career and technical education, which differs from the statutory definition identified in the Carl D. Perkins Vocational and Technical Act of 1998.

According to Scott and Sarkees-Wircenski (2001):

Most people identify career and technical education at the secondary level with courses in one of the following seven specific labor market program areas: agriculture, business, family and consumer sciences, marketing, health, trade and industry, and technical communications. (p. 2).

This differs from the statutory definition in the Carl D. Perkins Vocational and Technical Act of 1998 (PL 105-332) that defined CTE as:

Organized educational activities that (1) offer a sequence of courses that provide individuals with the academic and technical knowledge and skills that individuals need to prepare for further education and for careers in current or emerging employment sectors and (2) include competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills of individuals.

Essentially, the way the term CTE was used in this study was the de facto definition--secondary CTE programs in one of the aforementioned service areas--and not the statutory definition.

Limitations

The instrumentation was a potential limitation of this study and could be considered a threat to internal validity. If the instrument was not measuring stereotypes, then there is no way to accurately measure meta-stereotypes, let alone meta-accuracy. However, a pilot study was conducted to make sure the instrument was reliable and the items were validated first by the literature and then by a panel of experts. A detailed explanation of this process is discussed in Chapter 3. Another potential limitation of this study was socially desirable responding or participants distorting their real beliefs in an effort to make themselves look good in the eyes of the researcher. To deal with socially desirable responding, efforts were made to mask the researcher's association to CTE and to state certain stereotypic descriptors in opposite terms. According to Sigelman and

Tuch (1997) social desirability exerts a downward bias on the stereotype items and an upward bias on the meta-stereotype items. Essentially, there is a regression of both groups towards the mean because the ingroup and outgroup biases are produced in opposite direction. Nevertheless, because the stereotypes of CTE are less emotionally charged than racial stereotypes, social desirability should be not as big of an issue as it was with Sigelman and Tuch (1997).

Delimitations

The focus of this study dictated the types of research questions asked. One could argue that the relationships of various demographic variables to the stereotypes one possesses of CTE could be considered important. However, those relationships were not directly relevant to this study. If the outgroup had been a more heterogeneous group, such as the public, then those demographic variables would have been more relevant. This study identified the stereotypes for the sole purpose of establishing a baseline for later measuring the accuracy of meta-stereotypes. Any demographic information collected regarding the outgroup was only used to ensure proper ingroup and outgroup placement.

The ingroup and outgroup were purposely chosen in an attempt to apply the theories associated with meta-stereotypes to CTE. The ingroup and outgroup used in this study were a delimitation and placed limits on the generalizability and utility of the results. The information found on the stereotypes of CTE held by Virginia Department of Education administrators was limited to that group and cannot be applied to local education administrators or to the public. The information gathered about the meta-stereotypes of CTE administrators cannot be applied to others groups within CTE, such

CTE teachers or CTE students. This study dealt with a specific educational subgroup (CTE) and the stereotypes and meta-stereotypes associated with it; therefore applying the findings to other groups based on characteristics such as race, gender, occupation, socioeconomic status, ethnicity, or religion, would not be valid. The study was also delimited to secondary CTE students, teacher, and programs; therefore the results would not be applicable to other CTE students, teachers, and programs, such as those at community colleges.

Summary

Although much work has been done on the accuracy of stereotypes, few studies have focused on the accuracy of the perceptions of these stereotypes or meta-stereotypes. There has been considerable research on the collective attitudes, images, and perceptions of CTE; however, there has been only limited research on the theories associated with the meta-stereotypes of CTE. In fact, very little attention has been given to meta-stereotypes within the field of education, yet alone CTE. It is essential for local CTE administrators to accurately assess the stereotypes of others, because many social interactions are based on beliefs about stereotypes. In other words, the way local CTE administrators interact with the public and their peers, such as Virginia Department of Education administrators, is partly based on what they perceive the stereotypes of CTE to be. Local CTE administrators might not be engaging in behavior beneficial to CTE if the behavior is based on beliefs that are inaccurate. If local CTE administrators inaccurately assess the stereotypes of Virginia Department of Education administrators, it can have a profound effect on CTE programs. This study will determine the accuracy of the meta-stereotypes of local CTE administrator based on a comparison of the actual stereotypes of CTE held

by Virginia Department of Education administrators to the meta-stereotypes of local CTE administrators.

Chapter 2

Review of Related Literature

Introduction

This chapter reviews the related literature and discusses (a) stereotypes, (b) meta-stereotypes, (c) studies in education dealing with meta-stereotypes, (d) meta-stereotype studies in career and technical education (CTE), and (e) common stereotypic descriptors of CTE.

Resources utilized to accomplish this included a computerized search of data in the Educational Resource Information Center (ERIC) and an electronic review of

Dissertation Abstracts International and *Education Index*.

Stereotypes

What are stereotypes? Ironically, the term “stereotype” grew out of one of the occupations for which career and technical education now prepares workers. According to Samuels (1973), the word stereotype originated in the printer’s trade as a “one-piece printing plate cast in type metal from a mold” (p. 15). One could conclude that once a “stereotype” was made, it was rather difficult to alter; therefore, there was a permanent inflexibility associated with the word. When we transpose the concept of stereotype to the level of human interaction, the power of the term becomes even greater. Stereotypes, once developed, make it difficult for people to deal with individuals factors; instead they deal with generalities (Samuels, 1973). Stereotypes are inconsistent with variation and diversity and even positive stereotypes can impose generalizations that could be considered limiting (Schneider, 2004). Language supports stereotyping by providing individuals with words, which essentially serve as labels or categories.

Lippman (1922) introduced the term “stereotype” to the social sciences in his book, *Public Opinion*, and since then, there have been significant modifications in the term’s meaning and connotative elements. Stewart, Powell, and Chetwynd (1979) argued that when the term “stereotyping” was in its infancy, individuals failed to recognize its utility and focused on its apparent weaknesses, such as its relationship to prejudice and race relations. This definition is, to a large extent, the reason stereotyping was, and continues to be, connotatively damned as being a vehicle for discrimination. Lippman (1922) argued that stereotypes presented over generalized, exaggerated images, which overlooked variability and denied individuality. Historically, stereotypes were thought of as being erroneous, pathological, unjustified, and fictitious (Katz & Braly, 1933; Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950). Stereotypes are no longer seen as being synonymous with prejudice and discrimination; however they can easily serve as both their justification and source (McCauley & Stitt, 1978; Rettew, Billman, & Davis, 1993; Stewart, Powell, & Chetwynd, 1979). In recent literature, the perception that stereotypes are negative still exists, but not because of their association with prejudice and race relations. Schneider (2004) argued that the reason stereotypes are negative has more to do with interpersonal behavior than how the mind works. These broad generalizations (stereotypes), whether they are positive or negative, assume group homogeneity, which denies variability.

Stereotypes are qualities perceived to be associated with particular groups or categories of people. According to Schneider (2004), these qualities could be traits, expected behaviors, physical features, roles, attitudes, or beliefs. When applied to group interaction, the way the ingroup is stereotyped by the outgroup is related to the perceived

homogeneity of the ingroup. According to the homogeneity hypothesis, people perceive outgroup members as being more homogeneous in their traits than ingroup members (Park & Rothbart, 1982). Since homogeneity, or lack of variability, is one of the characteristics of stereotypes, the mere existence of defined groups adds to the likelihood that stereotypes will be present. Furthermore, the more homogeneous the conceptions of outgroup members are, the more extreme the evaluations of them will be Zebrowitz (1996). This leads to the question of how stereotypes are identified and established. Everyone has broad generalizations about the members of different groups. According to Schneider (2004), because of the importance of groups, it seems natural to categorize people in terms of their group membership. When individuals identify with a group, they adopt group features as part of their identity and make generalizations about members of other groups. What makes these broad generalizations stereotypes?

Measuring stereotypes. Stereotypes have been measured in numerous ways. According to the Schneider (2004), the easiest way to assess the content of stereotypes is simply to ask people what traits or features they associate with a given group. For example, if individuals readily mention “hard-working” when asked to describe a CTE student, one may assume that this trait is strongly associated with that group. This method of measuring stereotypes is commonly referred to as free response. Free response methodologies have been extensively used to study stereotypes and their relationship to prejudice (e.g., Allen 1996; Devine & Baker, 1991; Esses & Maio, 2002). Some have argued that the method does not produce an ideal measure of stereotypes. According to Schneider (2004), sometimes individuals have associations that are quite strong and explicit, but these associations fail to get reported for one reason or another. Other times,

individuals may not even be aware of some of the stereotypes they have, and yet those stereotypes guide behavior. Greenwald and Banaji (1995) have argued that at least some of the content of stereotypes is implicit and not readily available to the conscious. Therefore, asking participants to freely develop the stereotypes of different groups might not be the best methodology.

Another method of measuring stereotypes is to provide participants with a list of traits and then asking them to check or rate each trait. According to Schneider (2004), some of the problems associated with the free response technique can be overcome with attribute checking. This technique saves time because there is no need to code responses and the data they provide are better suited for quantitative analysis. Katz and Braly (1933) were the first to employ attribute checking methodology and many variations have followed. One of the major limitations of attribute checking is that it forces individuals to generate stereotypes, even if they do not hold them strongly. In other words, if participants are required to assign traits to different groups, then they might assign traits, even if those traits are not salient. Another weakness is that the attribute checking method does not allow individuals to rate the strength of their belief in different traits, it only determines if individuals agree that a given trait is associated with a group.

Some of the limitations of the attribute checking method can easily be finessed through slightly more sophisticated measurement. According to Schneider (2004), the most commonly used measure of stereotypes is a rating of the extent to which a group possesses a particular feature. Essentially, the difficulty and time required to check traits on a list is not all that much different than to ask a participant to rate the percentage of a group that possesses a given trait. Such measures seem to probe fairly directly into the

associations between groups and features that are the hallmarks of stereotypes. Usually, when individuals think about stereotypes, they think in terms of judgment about groups; therefore stereotypes refer to central tendencies or means of a group for some feature (Schneider, 2004). Because of this, it would be reasonable to assume that if it was believed that a group is homogenous, individuals would be more likely to form generalizations from a single group member and are more likely to see that group member as fitting the stereotypes of a group. Therefore, stereotypes can be measured by presenting participants with a list of traits or attributes and asking them the probability that a typical member of a group will possess that given trait. This methodology has been established by Kaman (1984) and Krueger (1996) and is very similar to asking participants what percentage of a group has a particular trait. Kaman (1984) argued that if a group is thought of as being homogeneous, then individuals will respond that the probability is higher for a typical member of the group to possess that given trait. The opposite is true when that group is thought of as being diverse. Krueger (1996) used a measure of typicality of the trait for the group as his standard measure.

This leads to the question of how high the probability or percentage has to be in order to consider the endorsed trait a stereotype. Brigham (1971) suggested that an individual's stereotypes consist of any trait he or she rates as belonging to a high percentage of a given group, but he failed to provide an exact number. Schneider (2004) suggested that coupling Brigham's (1971) methodology with Katz and Braly's (1933) idea of consensus would make that "high percentage" anything above 50%. In the Katz and Braly study (1933) participants were provided a list of 84 traits and asked to select those which seem to be typical of various racial groups. Traits that had at least 50%

consensus were thought to be stereotypes. The notion of 50% consensus as a criterion for determining stereotypes is common in social psychology and was used in subsequent studies (Gilbert, 1951; Devine & Eliot, 1995). Consequently, for the purposes of this study, any trait with the equivalent of a mean probability score above 60% was considered a stereotype. It was the belief of the researcher that this more rigorous measure would help eliminate some of the measurement error. This is explained in more detail in Chapter 3.

Meta-stereotypes

What are meta-stereotypes? One must realize that an individual's or group's stereotypes of an outgroup rarely function in a social vacuum. On the other side of that exchange exist the perceptions individuals and groups have about others' stereotypes of them. These perceptions, or stereotypes of stereotypes, are known as meta-stereotypes. In social psychology, meta-stereotypes have been defined as "a person's beliefs regarding the stereotypes that out-group members hold about his or her own group" (Vorauer, Main, & O'Connell, 1998, p. 917). There are three main components of meta-stereotypes; a) contextual component, b) behavioral component, and c) and cognitive component. The contextual component of meta-stereotypes is relevant for relations between groups of difference status or different social positions (Gordijn, Brix, Wijnants, Kooemen, & Finchilescu, n.d.). Individuals will activate different meta-stereotypes in different situations because they vary as a function of the specific outgroup. For instance, African-Americans have one set of meta-stereotypes related to Hispanic Americans and another set of meta-stereotypes that relate to the whites, and depending on the context of the situation, different meta-stereotypes will be activated.

The second characteristic of meta-stereotypes is the behavioral component. According to Gomez (2003), when the ingroup thinks the beliefs of the outgroup towards the ingroup are inconsistent with what they feel about themselves, three consequences may follow: avoidance, selective interaction, or hostile reaction. Research has shown that meta-stereotypes might have more of an impact on ingroup behavior than the actual stereotypes. According to Sigelman and Tuch (1997), meta-stereotypes, like stereotypes themselves, can decisively shape the behavior of members of the ingroup and outgroup. They presented an argument similar to Gomez's (2003) avoidance as they stated "blacks' eagerness to move into all-white areas seems more likely to be influenced by their conceptions of white's stereotypes of them than by the white stereotypes" (Sigelman & Tuch, 1997, p. 89). Vorauer, Main, and O'Connell (1998) also found that aversion to group interaction is often more justified by meta-stereotypes than by their stereotypes of the outgroup.

The third characteristic of meta-stereotypes is the cognitive component. The cognitive component of meta-stereotypes is related to an individual's willingness to identify with a given group. According to Gomez (2003) at least some ingroup members may have doubts about the correctness of what they think about themselves and its relation to meta-stereotypes. Some members are likely to think that their own perception is correct and disagree with a negative meta-stereotype, others might be uncertain as to whether they have self-assigned traits or, instead those that the outgroup is assigning to them. Individuals do not want to have others associate them with negative traits because of group membership; therefore, as a way to protect their self-esteem, they decrease their level of association with that group. Klein and Azzi (2001) suggested that ingroup

members attempt to modify meta-stereotypes to their advantage by confirming positive traits and disconfirming negative ones. According to Gomez (2003), when people assume that traits assigned to them are negative or undesirable, a decrease in ingroup identification could result.

Research has shown that the ingroup tends to overestimate, in a negative fashion, the stereotypes held by the outgroup. Sigelman and Welch (1994) studied African-Americans' perception of their inequality with respect to White Americans. In their study they found that 25% of African-Americans thought that more than half of White Americans share attitudes similar to the Ku Klux Klan. However, only 5% of White Americans recognize that they share this kind of attitude. Sigelman and Tuch (1997) found that the out-group's perceptions of the in-group's stereotypes of them are usually more negative than the beliefs actually held by the in-group, and are therefore inaccurate. In this study, African-Americans thought they were being evaluated more negatively by white Americans than they actually were. Gomez (2003) argued that the gap between stereotypes and meta-stereotypes may contribute to the antagonism between African-Americans and White Americans and decrease the amount of contact between the two groups. In Krueger's research (1996), personal and cultural beliefs of Blacks and Whites were investigated. He also found that both groups overestimate the negative views held by the respective outgroup and therefore exaggerate the meta-stereotypes in a negative fashion.

Vorauer, Main, and O'Connell (1998) found that meta-stereotypes held by members of dominant groups have important implications for intergroup relations. In their study they measured the meta-stereotypes of White Canadians in respect to the

stereotypes that Aboriginal Canadians hold regarding them. They found that White Canadians shared a negative meta-stereotype about how they are viewed by Aboriginal Canadians and this feeling of being stereotyped by the outgroup was associated with negative emotions about intergroup interactions as well as a decrease in self-esteem.

Rettew, Billman, and Davis (1993) performed similar research but did not refer to their dependent variable as meta-stereotypes; they generically referred to their variable as “the perceptions of stereotypes.” The main focus of these studies was to determine how accurately individuals assess the stereotypes others have of one’s own group. Rettew, Billman, and Davis stated, “just as stereotypes have been implicated in contributing to prejudice and discrimination, perceptions of stereotypes can also have strong social implications” (1993, p. 122). In their studies, they investigated the differences between gender and both stereotypes and meta-stereotypes, undergraduate degree program (focusing on business and non-business majors) and both stereotypes and meta-stereotypes, and geographical location and both stereotypes and meta-stereotypes. Their experiments were less emotionally charged than most research on meta-stereotypes and their results were less likely to be skewed by respondents providing socially acceptable answers. This study concluded that people tended to perceive other people’s stereotypes of them as more extreme than they actually were.

There was only one study that measured meta-stereotypes as being accurate; however in this study there was also an instance of the meta-stereotypes being overly positive. Tuohy and Wrennall (1995) found that Scottish police officers were fairly accurate in their perceptions of the public perceptions of attitudes toward the police, but

they thought that members of the public were more favorable in their stereotypes of police behavior than they were.

It has been demonstrated through the research that meta-stereotypes have a definite behavioral component and that these behaviors are based primarily upon inaccurate perceptions (low meta-accuracy). It has been suggested that the inaccuracy of meta-stereotypes factors into the animosity between various groups, particularly African-Americans and White Americans, and White Canadians and Aboriginal Canadians (Sigelman & Tuch, 1997; Vorauer et al, 1998). Even when stereotypes are less emotionally charged, there still is the tendency to overestimate the stereotypes that others have of ones own group (Rettew, Billman, & Davis, 1993). Otten, Mummendey, and Blanz (1996) suggested that effects of low meta-accuracy depend on the direction of the deviation. If the meta-stereotype is more positive than the out-group's stereotypes, low meta-accuracy supports a positive relation toward the outgroup; however, if the meta-stereotype is more negative than the outgroup's stereotype, low meta-accuracy relates to negative outgroup evaluation. This leads to the questions of how meta-stereotypes are measured and how their accuracy is determined.

Measuring meta-stereotypes. One method of measuring meta-stereotypes is to simply ask participants how they think they are stereotyped by other groups. In order to establish meta-stereotypes, Sigleman and Tuch (1997) utilized data from a 12-part questionnaire that inquired whether most White Americans hold to certain perceptions of African-Americans, or not. Three responses were available to the participants: yes, no, and unsure. The statements were as follows: "lazy," "are religious," "are more likely to commit violent crimes," "would rather live off welfare than work," to name a few

(Sigelman & Tuch, 1997, p. 89). After establishing the meta-stereotypes, they performed a series of confirmatory factor analyses to determine if the meta-stereotypes were linked together in any systematic way. Because of their simple baseline measurement, percentage agreement with different traits, they were able to compare the meta-stereotypes to parallel data about the actual stereotypes held by White Americans on those traits. In their comparison technique, they subtracted the percentage endorsing the meta-stereotype from the percentage endorsing the stereotype. This allowed Sigelman and Tuch (1997) to determine the accuracy of the meta-stereotypes. However, they failed to develop a systematic approach for determining how large a difference constituted accuracy or inaccuracy.

Another method of measuring meta-stereotypes is to use a modified form of a procedure known as the diagnostic ratio method. Diagnostic ratios are typically constructed from target ratings about the percentage of group members possessing particular traits and baseline ratings about the percentage of people in general possessing the traits. McCauley and Stitt (1978) utilized the original methodology and established that a target-to-baseline ratio significantly different from 1.0 indicates that a trait dimension is part of the stereotype of the group in question. Vorauer et al (1998) modified this procedure in their study in order to measure meta-stereotypes. Their target ratings involved estimating Aboriginal Canadian's beliefs about the percentage of White Canadian's possessing each of a series of traits. The baseline rating involved estimating Aboriginal Canadians' beliefs about the percentage of Aboriginal Canadians' possessing each of the traits. In their research, they focused entirely on meta-stereotypes and did not

determine the actual stereotypes held by White Canadians regarding Aboriginal Canadians; therefore accuracy was not an issue.

Rettew, Billman, and Davis (1993) utilized a similar approach but performed an analysis of variance between the group means of prevalence ratings for different characteristics thought to be stereotypes instead of using the diagnostic ratio. In their study, participants were asked to rate the percentage of members in a group that held a certain trait and the percentage of individuals in the U.S. in general who held that same trait. To determine meta-stereotypes, ingroup members were asked to rate the percentage of outgroup members they thought would endorse a given trait about the ingroup and to estimate how they thought the outgroup would respond when asked to rate the percentage of individuals in the U.S. with that same trait. In this study they had the actual stereotypes to compare to the meta-stereotypes. In order to establish accuracy they compared the mean scores and found that there was evidence of inaccurate meta-stereotypes, due to overestimation of stereotypes, across the three different stereotypes they measured. Two of the stereotypes they measured were more neutral (regional and business student stereotypes) and one was more emotionally charged (gender). This suggested that it was unlikely that students were underreporting their stereotypes about other groups to provide the socially acceptable response, being that the results were similar for all three stereotypes.

Studies in Education Dealing with Meta-stereotypes

Within education, different groups overestimate the degree to which others stereotype them. Rettew, Billman, and Davis (1993) studied the stereotypes of business students held by liberal arts students. In their study, students enrolled in the College of

Arts and Science (CAS) were asked to characterize business students and students enrolled in the College of Business were asked to estimate the responses of the former group based on a simple attitudinal scale. The stereotyped group (business students) overestimated how different others judge them to be even when those differences were small. In other words, the stereotyping group (students from CAS) perceived the business students as having a high degree of variability and not conforming to any one particular stereotype. However, in the minds of the business students, stereotypes existed and were quite extreme.

Meta-stereotype Studies in Career and Technical Education

Two studies within CTE have utilized the concept of meta-stereotypes, without giving mention to it (Brown & Clark, 1976; Tauber, 1979). Tauber (1979) was the first, within the field of CTE, to investigate CTE students' perceptions of stereotypes; even though he did not deal directly with meta-stereotypes, the indirect relationship of his dependent variable to this study deserves mention. He found that CTE students' awareness of discrimination and stereotyping increased as they advanced through high school. Although he did not investigate the accuracy of the perceived stereotypes, the CTE students nevertheless perceived certain levels of discrimination. As previously stated, meta-stereotypes have real world consequences because of their behavioral component. Brown and Clark (1976) found a significant difference between parents' attitudes toward CTE and the counselors' perception of the parents' attitude. With this study, the accuracy of perceptions was brought to light. They found that counselors were unable to accurately assess parents' attitudes toward CTE and in most cases, counselors perceived parents as having more negative attitudes toward CTE than what was the case.

According to Brown and Clark (1976) the inaccuracy of the counselors' perceptions about the parents' stereotypes of CTE led to fewer students being advised to take CTE courses.

Common Stereotypic Descriptors of CTE

CTE students. Much of the literature within the subfield of CTE related to stereotypes has focused on perceptions, images, and attitudes. Although perception, image, and attitudinal studies do not directly measure stereotypes, it would be beneficial to establish the relevancy of those studies in terms of their relation to the common stereotypic descriptors of CTE and CTE students. Kaman (1984) was one of the few researchers in CTE who focused directly on the stereotypes of CTE students. He examined the existence and nature of stereotypes that professional high school personnel have about CTE students by constructing a questionnaire around the socioeconomic, academic, career orientation, and social stereotypes of secondary non-CTE and CTE students. He concluded that high school personnel had different stereotypes about CTE students, as a group, than they did of what Kaman described as "typical high school students." Inherent in the title of his study was the fact that CTE students were atypical, thus unable to conform to the stereotypes of typical high school students. The nature of those differences appeared to be significantly more negative in the socioeconomic, academic, and social stereotypes of CTE students and more positive in career orientation stereotypes. Brown and Clark (1976) established a similar positive career orientation stereotype for CTE students as they found a significant relationship between a student's career goals and his or her decision to enroll in a CTE course. The more concrete the students' career goals were, the more likely they would enroll in a CTE course.

Brown and Clark (1976), Conroy (1969), Divita (1968), Lotto (1986), and Crowley and Weinrich (1964) confirmed the negative academic stereotype of CTE students identified by Kaman (1984). Divita (1968) concluded that CTE students were often stereotyped as students of low intelligence. Lotto (1986) described CTE students “as being less able or willing to succeed in academic subjects” (p. 45). Brown and Clark (1976) found a significant relationship between students’ grades and the counselors’ attitude toward enrolling the student in a CTE course. The better a student’s GPA, the less likely a counselor would recommend a student to take a CTE course. Conroy (1969) investigated the staff attitudes of middle school personnel about CTE and concluded that exposure to CTE does not damage favorable attitudes. However, even though overall attitudes toward CTE were favorable, many staff members had some reservations about CTE as a suitable program for the academically gifted student. Crowley and Weinrich (1964) found that teachers, while favorable in general toward CTE, were not satisfied with the scholastic records of students in CTE programs.

The negative socioeconomic stereotype of CTE students identified by Kaman (1984) was reinforced by Divita (1968), Field (1984), Gray and Herr (1998), Lotto (1986), Michigan Vocational-Technical Education Service (1985), and Raspberry (1991). Divita concluded that CTE students were often stereotyped as students of low-income families. In a study of state legislatures and their attitudes towards CTE, Field (1984) found state legislatures collectively thought that CTE was directed at a particularly low class of students. Others determined that the public thought of CTE as dead-end curriculum for minority students with no other educational or career options (Lotto, 1986; Michigan Vocational-Technical Education Service, 1985; Raspberry, 1991). Gray and

Herr (1998) suggested that the negative stereotypes of career and technical education have their historical roots in America's pre-industrial developments where the youth who participated in career and technical education were from the lowest social classes.

There has been evidence supporting three of the four stereotypes (career-orientation, socioeconomic, and academic) identified by Kaman (1984). The career-orientation stereotype of CTE students is generally positive, and the socioeconomic and academic stereotypes of CTE students are generally negative. However, there has been no mention of the negative social stereotype identified by Kaman (1984) in any of the other CTE literature dealing with perceptions, attitudes, and images.

CTE programs. Career and technical education has often been stigmatized by the public as an institutional dumping ground, a second-class educational alternative, and a dead-end curriculum for minority students with no other educational or career options (Michigan Vocational-Technical Education Service, 1985; Raspberry, 1991). Much of the literature related to the stereotypic descriptors of CTE programs labels CTE as being different, separate, lacking in diversity, expensive to maintain, or of lower value than traditional academic programs (Divita, 1968; Tauber, 1979; Hamlin, 1967; Howe, 1967). Howe (1967) blamed educators for negative attitudes about CTE and felt that educators would have to revise their attitude that career and technical education was an awkward appendage to the academic curriculum. Divita (1968) investigated the attitudes of school administrators and board of education members towards secondary CTE. According to Divita (1968), these groups felt that present CTE programs were not diverse and/or extensive enough to adequately serve the needs of high school students. In a study of the public's evaluation of CTE, Hamlin (1967) found that the public does not perceive CTE

to be a good investment because modern equipment is expensive, and class size is usually small.

Other stereotypic descriptors found in the literature are that CTE programs are not for the college bound, are only beneficial to a certain segment of the student population, and are focused on special needs students (Divita, 1968; “What do people think of us?,” 1997). Divita (1968) found that CTE was perceived by administrators and school board members as being of much value and importance, but only for a certain segment of the student population. A study conducted by the staff of the Association for Career and Technical Education and presented in their trade publication *Techniques* (1997) had similar findings. The study measured the attitudes of parents towards CTE and determined parents’ level of knowledge towards CTE (“What do people think of us?,” 1997). The study found that only a few respondents could correctly identify some of the major CTE programs, while many of the respondents had generally positive attitudes towards CTE. This could mean that they may not have understood to what they were responding, but were providing what was thought of as the socially acceptable response. Even though positive attitudes were exposed, the special needs emphasis and not-for-the-college-bound attitudes were still evident in the responses of the participants (“What do people think of us?,” 1997). Once again, these stereotypes are not necessarily negative, only somewhat inaccurate and limiting.

The study “What do people think of us?” (1997) also found that strong support for career and technical education still existed, but confirmed that some of the traditional myths persist. When parents were asked to identify groups that they thought would benefit from career and technical education only 76 percent responded to the “all

students” category. Ninety-six percent of respondents felt that students not going to college would benefit from career and technical education and 98 % thought that students with disabilities would benefit (“What do people think of us?,” 1997, p. 14). These results seem to reinforce the mentality that career and technical education programs are most beneficial to those who traditionally have difficulty with academics. In other words, the results of this survey seemed to demonstrate the remnants of both the “dumping ground” and “hands versus heads” stereotypes. However, these stereotypes are not necessarily negative. In that same survey, respondents were asked to react to a series of statements that were intended to explore the stereotypes of career and technical education at a deeper level. Fifty percent of the respondents either strongly agreed or agreed to the statement, “Career and technical education is mostly for high school kids who don’t plan to go to college” (“What do people think of us?,” 1997, p. 15).

Field (1984) surveyed the state legislatures of 13 states to assess their collective perceptions of CTE in light of the previous excellence in education reform movement, perhaps a movement that paralleled the No Child Left Behind movement. The findings were related to the stereotypes of CTE programs and teachers. When asked where secondary CTE fell into the academic reform movement brought on by the Nation at Risk Report, there was a growing feeling that career and technical education belonged more at the post-secondary level than at the high school level (Field, 1984). State legislatures from southern states generally had a more negative view of career and technical education than elsewhere in the United States. According to Field (1984), legislatures from southern states indicated a lack of trust for the quality of career and technical education programs, especially at the high school level. One of the respondents in the

Field study (1984) stated “career and technical education was directed at a particular class of students and CTE teachers are not required to have the same certification as general education teachers” (p. 5). The perceptions of state legislatures can have an enormous impact on career and technical education because they allocate funding for such programs. With the power of the purse, the stereotypes of career and technical education among state legislatures have great significance.

Many career and technical education leaders have proposed different ways to change the negative stereotypes. However, before those stereotypes can be changed, CTE leaders must fully understand the way CTE, CTE students, and CTE teachers are stereotyped by different outgroups. If programmatic behavior within CTE is based on the faulty perceptions of others stereotypes of CTE, resources could be considered misallocated or even wasted. Much could be gain from developing a higher level of meta-accuracy related to the stereotypes of CTE held by outsiders, and a starting point would be to gain a better understanding of how Virginia Department of Education administrators stereotype CTE.

Summary

This chapter reviewed the related literature and discussed (a) stereotypes, (b) meta-stereotypes, (c) studies in education dealing with meta-stereotypes, (d) meta-stereotype studies in CTE, and (e) common stereotypic descriptors of CTE. The measurement of stereotypes and meta-stereotypes was also reviewed.

Chapter 3

Research Methodology

Introduction

This chapter describes the research methodology used to identify the stereotypes Virginia Department of Education (VDOE) administrators have of career and technical education (CTE), the meta-stereotypes local CTE administrators have regarding the stereotypes Virginia Department of Education administrators have of CTE, and the accuracy of those meta-stereotypes, by comparing the meta-stereotypes to the stereotypes. The following sections are contained in the chapter: (a) participants, (b) instrumentation, (c) pilot testing, (d) data collection procedures, (e) non-respondent follow-up, and (f) analysis of data.

Participants

Determining stereotypes of CTE held by the Virginia Department of Education administrators. Two hundred and fourteen Virginia Department of Education administrators served as possible participants for the first part of this research study. One hundred and thirty-seven administrators were randomly selected using the table of random numbers. This allowed for a 95% level of confidence with a margin of plus or minus 5 percentage points (Krueger, 2001). Participants were identified from the Virginia Department of Education's on-line directory, and every administrator listed on the directory had an equal chance of becoming a participant. Individuals with the title of support staff, administrative assistant, or secretary were excluded from the list of potential participants. During data collection, it was determined whether all participants met the outgroup requirements. The requirements for outgroup membership were that the

participants did not have a bachelors degree or higher in CTE or a CTE related field, and they did not have any teaching experience in CTE or a CTE related-field. Participants who did not meet the requirements for outgroup membership were excluded from the study. This is discussed further in the Data Collection section of this chapter.

Determining meta-stereotypes of CTE administrators. One hundred and forty six local CTE administrators from the Commonwealth of Virginia served as possible participants for the second part of the research study. Ninety three participants were randomly selected using the table of random numbers, allowing for a 95% level of confidence with a margin of plus or minus 5 percentage points (Krueger, 2001). Potential participants were identified on the Virginia Office of Career and Technical Education's on-line directory, as the main CTE administrator for every school division. Each of these individuals were responsible for developing the local school division's CTE plan. During data collection it was determined whether the selected participants met ingroup requirements. The ingroup requirements were that a participant must have a bachelor's degree or higher in CTE or a CTE-related field or have teaching experience in CTE or a CTE-related field. Participants who did not meet the requirements for ingroup membership were excluded from the study. It was found that three of the individuals selected did not meet these criteria before the desired response rate (64%) was met; therefore three replacements were randomly selected from the remaining pool of 53 participants. This is explained in more detail in the Data Collection section of this chapter.

Instrumentation

A review of literature was conducted which included a computerized search with the Educational Resources Information Center (ERIC), Buros Institute of Mental Measurements, and the Dissertation Abstracts systems. Upon completion of the review, it was determined that an existing instrument was not available to completely answer the research questions stated for this study. One instrument was found that measured the stereotypes of CTE students, Kaman (1984); however instruments measuring the stereotypes of CTE teachers and programs could not be identified. After permission was granted, Kaman's (1984) entire instrument was combined with two additional sections that were created to measure the stereotypes of CTE teachers and CTE programs. All of the items were either identified in the literature as being stereotypes of CTE programs, CTE students, or CTE teachers or were adapted from Kaman's (1984) instrument. As a result, the researcher developed two questionnaires: (a) to determine the stereotypes Virginia Department of Education administrators hold regarding CTE, and (b) to measure the meta-stereotypes of local CTE administrators as they relate to the stereotypes of Virginia Department of Education administrators hold regarding CTE.

For the first questionnaire, two sections were developed. Section one was designed to obtain basic demographic information from Virginia Department of Education administrators. Section two was developed in three different parts to determine the stereotypes Virginia Department of Education administrators have of CTE students, teachers, and programs, respectively.

Questionnaire one, section one. The background section of the instrument collected selected demographic information from each state-level education administrator

to determine outgroup eligibility. Two questions were asked: (a) whether they have a bachelor's degree or higher in CTE or a CTE-related field, and (b) whether they had teaching experience in CTE or a CTE-related field.

Questionnaire one, section two. This section of the instrument measured the stereotypes Virginia Department of Education administrators have of CTE. The first part of this section had 33 items designed to measure the stereotypes of CTE students. The second part of this section had 12 items designed to measure the stereotypes of CTE teachers. The third part of this section had 17 items designed to measure the stereotypes of CTE programs. All of the items measuring the stereotypes of CTE students were based on the questionnaire Kaman (1984) developed to determine the stereotypes high school personnel have regarding secondary CTE students and non-CTE secondary students. All of the items measuring the stereotypes of CTE programs were identified in the literature as being stereotypes individuals typically possess regarding CTE programs. Five of the items measuring the stereotypes of CTE teachers were adapted from items used by Kaman (1984) and the other seven items were stereotypes of CTE teachers identified by Field (1984). All of the items were developed in a parallel fashion to the items used by Sigelman and Tuch (1997) to establish a baseline for later determining the accuracy of meta-stereotypes. The instrument in this study asked participants (Virginia Department of Education administrators) to indicate the probability that each item accurately described attributes or characteristics of typical CTE students, teachers, or programs. For the purposes of this study, a 10-point probability scale was utilized with choices in increments of 10 ranging from 1-10% to 91-100%. The scale also allowed respondents to choose zero probability, making eleven possible choices. Kaman (1984)

found this format allowed the participants to feel they were not making an absolute personal judgment, but rather a more objective assessment of the chances a student, teacher, or program would exhibit a particular characteristic. This format was therefore considered a measure of variability and was suitable for establishing stereotypes (Schneider, 2004).

Questionnaire two, section one. The background section of the instrument collected selected demographic information from each CTE administrator to ensure ingroup eligibility. The items asked whether they had teaching experience in CTE or a CTE-related field, and whether they possessed a degree in CTE or a CTE-related field.

Questionnaire two, section two. This section asked local CTE administrators how they believed a typical Virginia Department of Education administrator would respond to certain items related to the stereotypes of CTE and paralleled the different parts and items on questionnaire one, section two. The instructions were modified using the methodology employed by Sigelman and Tuch (1997) and Rettew, Billman, and Davis (1993) to more accurately measure meta-stereotypes.

Pilot Testing

Since the researcher developed a new instrument, it was necessary to conduct a pilot test for clarity, simplicity, communicability, acceptability, appropriateness, and practicality before its use (Finch & Crunkilton, 1999). The instrument was piloted with 17 college students preparing to become CTE teachers and 17 college students from outside of CTE was administered in February of 2004. All of the participants in the pilot study were students at Virginia Polytechnic Institute and State University in Blacksburg, Virginia. The aforementioned number of subjects exceeded the recommended guidelines

for the number of participants in a pilot study set forth by Krueger (2001). Raw data were automatically compiled in a database and later transformed to an SPSS 10.0 data file. Participants were provided with (a) cover letters explaining the nature and purpose of the study, and (b) questionnaires. The subjects' permission was received during the administration of the instrument. This met all of the requirements set forth by Virginia Tech's Institutional Review Board for dealing with human subjects. All of the subjects were over the age of 18.

The pilot test was conducted to determine the clarity of the instructions and questions and to establish this instrument's reliability. Four participants commented on the item measuring whether being a "master teacher" was a stereotype of secondary CTE teachers. Based on that feedback, the item was removed from the final instruments. The reliability of the two separate instruments was measured using Cronbach's alpha. The instrument measuring the stereotypes of CTE students, teachers, and programs had an alpha of .9155. The instrument measuring meta-stereotypes had an alpha of .8409. The data gathered in the pilot study were not used in the final analysis.

The validity of the instrument was established using a panel of experts. The function of the panel of experts was to (a) analyze the items to ensure they related to the stereotypes of CTE, and (b) determine whether the instrument was acceptable for the given population. The instrument was sent to two Ph.D. candidates from Virginia Tech, who possess an extensive knowledge in the field. It was determined by the subject matter experts that the wording of six of the 64 items was somewhat misleading. The wording on all six of those items was modified and both instruments were changed according to the suggestions provided by the subject matter experts.

Data Collection

Data were gathered during the Spring Semester of 2004. All participants were notified of the study through e-mail, and the cover letters and questionnaires were sent to the participants' office addresses throughout the Commonwealth of Virginia. Participants were sent: cover letters, instructions, and information about the conditional incentive. Included in the body of both the e-mail and cover letter were directions for completing and returning the questionnaire, the researcher's contact information for questions and problems, assurances of anonymity, and a brief overview of the study. To limit bias, the researcher's e-mail signature was changed, removing "CTE Ph.D. Candidate." Thus, participants did not know that the researcher was studying in the CTE program, a potential source of rater bias (Kaman, 1984).

The data collection plan

First phase

March 1- E-mailed pre-notices to initial participants (ingroup 93; outgroup 137).

March 2-First mailing of questionnaire and cover letter; included stamped return envelope (ingroup 93; outgroup 137).

Second phase

March 15- E-mailed prompts about second mailing of questionnaire. E-mailed pre-notices to ingroup replacements (ingroup 56; outgroup 95).

March 16- Second mailing of questionnaire with cover letter and written prompt. First mailing of questionnaire to ingroup replacements (ingroup 3).

March 22- Prompted by telephone. Emphasized the need to return the completed questionnaire to be eligible for the conditional incentive (ingroup 37; outgroup 85).

March 31- Ceased data collection for all participants.

Because factor analyses were used in this study, the number of participants or cases was an issue. According to Darlington, Weinberg, and Walhberg (1973) at least 50 cases are needed for a more simple factor structure. Bryant and Yarnold (1995) found that the subjects-to-variables ratio should be no lower than five. Four distinct factors have been identified in the previous literature on the stereotypes of CTE students; Academic, Social, Socioeconomic, and Career Orientation (Kaman, 1984). Similar factors were found during the pilot study for each of the three sections of the instrument, making the cumulative number of identified factors 12. Therefore, for the purposes of this study, 60 cases were established as the lowest acceptable number of responses. This was within the guidelines set forth by Darlington, Weinberg, and Walhberg (1973) and Bryant and Yarnold (1995). It was determined that if either the ingroup or outgroup had an number of responses less than 60 after the first phase of the data collection and at least one individual who responded did not meet ingroup or outgroup criteria, an equal number of replacements would be randomly selected from the remaining pool of potential participants. After the first phase of data collection, three of the local CTE administrators did not meet ingroup criteria and only 45 participants had responded. Therefore, three more participants were selected from the remaining pool of local CTE administrators using the table of random numbers. All three replacements met ingroup criteria and responded before March 31. That, coupled with the attainment of the minimum

acceptable number of responses before March 31, allowed the researcher to cease data collection on that date.

Conditional incentives. The chance at winning a gift certificate at a book retailer was offered as the conditional incentive for both the ingroup and the outgroup, including the replacements. The conditional incentives were promised upon return and completion of the questionnaire before the end of the respective data collection period, and was within the guidelines set forth by Asche and O'Reilly (1979). Individuals who did not meet ingroup and outgroup requirements, but responded before data collection ceased, were also given the conditional incentive.

Non-respondent Follow-up

An effort to compare the responses of the respondents with those of non-respondents was employed. A non-respondent follow-up survey was conducted to determine if significant differences existed between those who responded and those who did not. If differences are observed, application of the research findings should be limited to the respondents. Non-respondents were defined as those from whom no or incomplete information was received during the normal planned data collection sequence (Asche & O'Reilly, 1979). The same panel of subject matter experts used to validate the instrument selected the nine most important items on the questionnaire in terms of their relation to the research questions. Twenty non-respondents from the ingroup and 20 from the outgroup were selected using the table of random numbers. All of the individuals from the outgroup agreed to participate; however, only 17 individuals from the ingroup agreed to participate. These individuals were telephoned and asked to respond to the selected items (Items S3, S8, S10, S17, S30, T6, P2, P8, P12).

Independent sample T-tests were used to determine if any statistically significant differences--at the .05 alpha level--existed between respondents and non-respondents on any of the nine items. As indicated in Appendix F and Appendix G, no such difference was found in either the ingroup or the outgroup. The findings in the study, therefore, may be assumed to be representative of the entire sample, not just those who responded. These procedures fell within the guidelines suggested by Asche and O'Reilly (1979).

Analysis of Data

Determining the stereotypes and meta-stereotypes. The data from each of the questionnaires were transferred into a database using the Statistical Package for the Social Sciences (SPSS 10.0). Descriptive statistics were calculated and reported. A stereotype was considered any item with a mean probability greater than 60% or the mutually exclusive contradiction of any item with a mean probability less than 40%.

The method of establishing stereotypes using the mutually exclusive contradiction of items with mean probabilities of less than 40% was only used when the original item and its negatively stated opposite were: (a) mutually exclusive, and (b) exhausted all other possibilities. With the statements "plans to go to college" and "does not plan to go to college," the two statements logically cover all of the possibilities being that the later statement could refer to numerous things, such as gaining full-time employment or joining the military. This is not the same as the assumption that "plans to go to college" and "does not plan to go to college" could be placed on polar ends of a continuum. However, if "plans to go to college" was placed on one end, the statement "does not plan to go to college" would allow for its polar opposite, whatever that may be, to be placed on the other end because of its inclusiveness. If it was believed that there was a 37%

probability that a typical CTE would plan go to college, the remaining 63% could be accounted for by the statement “does not plan to go to college.” Therefore, “does not plan to go to college” could be considered the stereotype based on the mean probability of 37% that the typical CTE student plans to go to college. In other words, the items with mean probabilities of less than 40% were recoded so that their mutually exclusive opposite was the stereotype.

Sigleman and Tuch (1997) used a similar methodology as they compared the percentage of individuals endorsing the stereotypes “unpatriotic” and “unintelligent” to the percentage of individuals predicting that the stereotypes “patriotic” and “intelligent” would not being endorsed. Essentially, they treated the endorsement of a stereotype (unpatriotic) and the lack of endorsement for its perceived opposite (patriotic) as the same thing. It should be noted that Sigelman and Tuch (1997) assumed the lack of patriotism and intelligence equated to being unpatriotic and unintelligent, which is not necessarily true being that the items they compared were not mutually exclusive, nor were they exhaustive. However, in this current study, all of the stereotypes established with the less than 40% probability methodology were both mutually exclusive and exhaustive.

After a conducting pilot study with his original instrument and receiving feedback from the participants, Kaman (1984) reworded certain items so the stereotypical descriptors of CTE students were stated in opposite terms. This was done to prevent participants from providing socially acceptable responses; however, it was only done in a few instances. On the original instrument the following statements were included: (a) “has a low-average IQ,” (b) “is from a blue-collar or agriculture background,” and (c)

“does not plan to go to college.” The instrument ultimately used in the study included the reworded statements: (a) “has an above-average IQ,” (b) “is from middle to upper socioeconomic class,” and (c) “plans to go to college.” Low mean probabilities on the aforementioned items established stereotypes when the items were recoded to state the actual stereotypical descriptor of CTE students. For example, a low mean probability on the item “has an above-average IQ” was the assumed equivalent of a high mean probability for what Kaman (1984) found to be the stereotypical descriptor, or CTE students having a low IQ. However, Kaman (1984) failed to recode the items that presented the stereotypical descriptors, but had low mean probabilities. For example, the item “has a high absentee rate” was not recoded even though it had a mean probability of less than 30%. Using the same logic, the stereotype would be that CTE students do not have a high absentee rate. Therefore, in this current study the mutually exclusive contradiction of any item with a mean probability of less than 40% was considered a stereotype, not just the items that were recoded forms of traditional stereotypical descriptors of CTE.

Two principle components factor analyses were conducted; (a) one with the data collected on the questionnaire measuring stereotypes, and (b) one with the data collected on the questionnaire measuring meta-stereotypes. This was done to reduce the data for analysis and to determine the nature and number of any underlying patterns that existed in the data. All of the orthogonal factors will be discussed in terms of their relation to the previously established stereotypes of CTE. A varimax rotation was used to make it easier to identify each variable with a factor. In doing this, the stereotypes held by Virginia Department of Education administrators and the meta-stereotypes held by local CTE

administrators could be established as a baseline for later determining the accuracy of the aforementioned meta-stereotypes.

All of the items were used in the factor analyses so that the overall patterns in responses could be determined. The pooled data factor analyses required parallel data and using all of the items on the instrument, not just those endorsed as stereotypes or meta-stereotypes, ensured similar data across the two groups. Another reason for using all of the items in the factor analyses was to be able to compare the factor loadings with the factors identified by Kaman (1984). In order to be able to do that, all of the items on the first part of the questionnaires were necessary.

Determining the accuracy of meta-stereotypes. The two parallel sets of factor analyses were compared using a factoring technique known as the pooled data method. This factor comparison technique was used to determine if both samples had the same factor structure. The pooled data method involved combining the data for two samples, and adding a dummy variable whose coding represents ingroup and outgroup membership. The factor loadings of this dummy variable indicated the factors for which the groups' mean factor scores would be most different. If no factors loaded on the dummy variable using the pooled data method, then Virginia Department of Education administrators and CTE administrators have the same factor loadings and meta-stereotypes could be considered accurate. If factors load on the dummy variable, differences in the factor structure existed between the stereotypes of CTE held by Virginia Department of Education administrators and what the local CTE administrators believed those stereotypes to be. All factors with Eigen values of greater than 1.00 were considered to be differences.

This study coupled the pooled data method with a more descriptive approach to examine the nature of the aforementioned differences. The mean probability for each of the items on questionnaire 1, section 2 and questionnaire 2, section 2 was identified. In establishing the stereotypes of CTE held by Virginia Department of Education administrators, any item with a mean equal probability of greater than 60% or the mutually exclusive contradiction of any item with a mean probability of less than 40% was identified as a stereotype. Schneider (2004) established the relevancy of using percentage measures as a method of establishing stereotypes. He stated “when we think a group is homogenous, we are more likely to infer group properties from single individuals and more likely to see group members as fitting our stereotypes of the group” (Schneider, 2004, p. 48). Devine and Baker (1991), Gilbert (1951), and Katz and Braly (1933) have all used similar procedures and although this is one of the more simplistic measures of stereotypes, a simple measure was necessary in this study to establish a baseline to later compare them to meta-stereotypes. In establishing the meta-stereotypes held by local CTE administrators, a parallel approach was used.

The comparison of the stereotypes to the meta-stereotypes revealed four possible scenarios for each item (Figure 1): (a) endorsement of a stereotype, and predicted endorsement of a stereotype (high meta-accuracy), (b) endorsement of a stereotype, and no predicted endorsement of the stereotype (low meta-accuracy), (c) non-endorsement of a stereotype, and predicted endorsement of a stereotype (low meta-accuracy), and (d) non-endorsement of a stereotype, and no predicted endorsement of the stereotype (high meta-accuracy).

	<i>Local CTE Administrators</i> Predicted Endorsement	<i>Local CTE Administrators</i> Predicted Non-Endorsement
<i>VDOE Administrators</i> Endorsement of Stereotype	High Meta-accuracy	Low Meta-accuracy
<i>VDOE Administrators</i> Non-endorsement of Stereotype	Low Meta-accuracy	High Meta-accuracy

Figure 1. Tabular Representation of Possible Scenarios

Summary

This chapter described the research methodology used to identify the stereotypes Virginia Department of Education administrators hold regarding CTE, the meta-stereotypes local CTE administrators have regarding the stereotypes of Virginia Department of Education administrators about CTE, and the accuracy of those meta-stereotypes, by comparing the meta-stereotypes to the stereotypes. It also described the participants, instrumentation, pilot test, non-respondent follow-up, data collection, and analysis of data.

Chapter 4

Findings

Introduction

The problem addressed in this study was to determine the accuracy of local CTE administrators' meta-stereotypes. In order to do this, the stereotypes of CTE had to be established and compared to the aforementioned meta-stereotypes. This study first determined the stereotypes Virginia Department of Education administrators had of CTE students, programs, and teachers, and then compared them to the meta-stereotypes local CTE administrators had regarding stereotypes of CTE students, teachers, and programs held by Virginia Department of Education administrators.

The results of the data are organized according to the three research questions stated in Chapter 1.

1. What are the stereotypes of CTE students, teachers, and programs, held by Virginia Department of Education administrators?
2. What are the meta-stereotypes of local CTE administrators regarding the stereotypes of CTE students, teachers, and programs, held by Virginia Department of Education administrators?
3. What is the accuracy of local CTE administrators' meta-stereotypes (meta-accuracy)?

Research Question One

What are the stereotypes of CTE students, teachers, and programs held by Virginia Department of Education administrators? The questionnaire used to establish the stereotypes of CTE was sent to 137 administrators working for the Virginia Department of Education. Of the 77 instruments that were returned, 61 were usable. Four instruments were returned blank, indicating that the individuals did not want to participate in the study. Two individuals who returned instruments failed to meet outgroup criteria by having either a degree or teaching experience in CTE. Ten individuals returned instruments after data collection ceased on March 31. As a result, those individuals were considered non-respondents and the data they provided were not used in the final data analysis. A total of 61 questionnaires were usable for the data analysis.

As described in Chapter 3, the 62 items used in the questionnaire were largely based on Kaman's instrument (1984) coupled with stereotypical descriptors of CTE that were identified in the literature as indicated in Chapter 2. The first 33 questions--S1 through S33--measured the stereotypes of CTE students; questions 34 through 45--T1 through T12--measured the stereotypes of CTE teachers; and questions 46 through 62--P1 through P17--measured the stereotypes of CTE programs.

As discussed in Chapter 3, all of the items with means probabilities greater than 60% were considered to be stereotypes. These items are listed in Table 1. It should be noted that the mutually exclusive contradiction of certain items were also considered stereotypes. This was only the case when the item had a mean probability of less than 40%. It was the belief of the researcher that if the statement "does not plan to go to

college” was used, respondents would have provided the socially acceptable response and would not have endorsed it as a stereotype. However, if the mean probability for the item stating “plans to go to college” was 37%, it would be reasonable to conclude that it was believed by the outgroup that there was a 63% probability that the typical CTE student would not go to college. These items are listed in Table 2.

The items listed in Table 2 are the mutually exclusive contradictions of items with mean probabilities of less than 40%. These items established that CTE students do not plan to go to college, and are not from middle to upper socio-economic class, do not have disciplinary problems, and do not have a high absentee rate. The first two stereotypes were established by Kaman (1984) and depict what could be considered the unique nature of CTE students. CTE programs were stereotyped as not being outdated, not being remedial in nature, and not focusing on occupations that are not in demand, all of which could be considered positive or characteristics desired of all educational programs.

Table 1

Mean Probabilities for Items Identified as Stereotypes of CTE Students (S), Teachers (T), and Programs (P)

Item	Statement	Mean Probability
S6	Is good with concrete concepts.	70.67%
S19	Is interested in life.	68.83%
S20	Feels good about him/herself.	67.67%
S26	Is interested in how others feel about him/her.	66.00%
S17	Enjoys non-academic classes more than academic ones.	65.83%
S4	Is motivated by material rewards.	63.67%
S13	Shows respect for teachers.	62.83%
S24	Is motivated in school by a sense of accomplishment.	62.00%
S25	Is interested in the social aspects of the school.	61.50%
T3	Has lots of on-the-job experience.	78.50%
T1	Possesses a bachelor's degree.	78.17%
T8	Is good with concrete concepts.	77.83%
T4	Is more of a practitioner than a theorist.	76.17%
T2	Has formal training in pedagogy.	72.17%
T7	Exemplifies what his or her school stands for.	70.67%
T12	Is above average in intelligence.	64.83%
P1	All students can benefit from it.	78.17%
P15	Does a good job of preparing people for meaningful employment.	74.33%
P17	Is a good return on investment.	73.50%
P8	Is isolated from the rest of the school.	63.17%
P9	Provides for the education of the whole person.	62.67%
P7	Is for students who plan to enter high skill/high wage occupations.	60.17%

Table 2

Items with Mean Probabilities of Less Than 40%

Item	Statement	Mean Probability
S1	Has disciplinary problems.	28.83%
S29	Has a high absentee rate.	37.17%
S10	Plans to go to college.	37.67%
S31	Is from middle to upper socio-economic class.	38.00%
P14	Focuses on occupations that aren't in demand.	26.17%
P11	Is outdated.	30.83%
P13	Is remedial in nature.	33.50%

Note. The stereotype is the mutually exclusive contradiction of the items listed above.

Factor analysis. The statistical procedure of factor analysis was used to reduce the data for analysis and to determine the nature and number of any underlying patterns that existed in the data. The underlying patterns that existed in the outgroup's data were established for later comparison to the underlying patterns in the ingroup's data. A varimax rotation was used to make it easier to identify each variable with a factor. All of the factors identified in this study had Eigen values greater than one, a widely accepted criterion for establishing a factor. The part of the questionnaire measuring the stereotypes of CTE students was based on the instrument developed by Kaman (1984). Since he identified four distinct factors in his research: Socioeconomic, Social, Academic, and Career Orientation; a confirmatory factor analysis was conducted to determine if the items loaded on the same four factors. As listed in Table 3, six factors regarding the stereotypes of CTE students were found. Four of the six factors were similar to the factors previously established by Kaman and had items with similar factor loadings. The factors found in this study that were not similar to those established by Kaman were Status and Leadership. The Status factor was identified in the previous

literature as a stereotype (Lotto, 1986; Michigan Vocational-Technical Education Service, 1985; Raspberry, 1991); however, the Leadership factor was not identified.

Table 3

Eigen Values and Percentage of Variance Accounted for by Each Factor with Varimax Rotation, and Alpha Reliability

Factor Name	Eigen Value	Percentage of Variance	Alpha
<i>Students (S)</i>			
Academics	5.670	17.182	.8805
Socialization	3.995	12.106	.8308
Status	3.633	11.009	.8295
Leadership	2.658	8.054	.8268
Socioeconomic Status	2.598	7.871	.8291
Career Orientation	2.266	6.867	.7552
<i>Teachers (T)</i>			
Qualifications	3.795	31.627	.7708
Practicality	2.140	17.829	.5868
Socialization	1.881	15.675	.7515
<i>Programs (P)</i>			
Utility	3.428	20.163	.7971
Student Composition	2.669	15.701	.7636
Quality	2.156	12.683	.6566
Focus	2.018	11.872	.7178

For the part of the questionnaire measuring the stereotypes of CTE teachers, three factors were found: Qualifications, Practicality, and Socialization. Because there was only limited research on the stereotypes of CTE teachers, this factor analysis was largely exploratory. Only one stereotype had been established in the previous research and that was CTE teachers not having the same qualifications as other teachers (Field, 1984). The statements measuring this stereotype loaded on the Qualifications factor. For the part of the questionnaire measuring the stereotypes of CTE programs four factors were

identified: Utility, Student Composition, Quality, and Focus. This factor analysis was also largely exploratory in nature.

Once the 62 items were placed in their respective factors, Cronbach's alpha, a reliability test of the factors, was conducted. As indicated in Table 3, the alpha scores for the factors in all three parts of the instrument were high to moderate, ranging from .8805 for Academics in the part of the instrument measuring the stereotypes of CTE students to .5968 for Practicality in the part of the instrument measuring the stereotypes of CTE teachers.

Table 4, Table 5, and Table 6 are summary tables indicating final placement of statements into each factor for the three parts of the questionnaire. These tables indicate the statements in each factor and the correlation coefficient associated with each statement with that factor.

Table 4

*Items Placed in Each Factor and Correlation Coefficients Associated with That Factor:
Stereotypes of CTE Students*

Factor	Statement	Correlation Coefficient
Academics		
S28	Would be perceived as having a low status by other students.	.7366
S21	Is difficult to motivate.	.7256
S16	Does not perform well in the basic skills areas.	.7252
S14	Would be rated in the lower third of the class.	.6729
S27	Will need remedial help in high school.	.6704
S17	Enjoys non-academic classes more than academic ones.	.6119
S29	Has a high absentee rate.	.5964
S1	Has disciplinary problems.	.5732
S11	Is bored with school.	.4889
S8	Has difficulty with abstract concepts.	.3389
Socialization		
S26	Is interested in how others feel about him/her.	.7669
S25	Is interested in the social aspect of school.	.7644
S32	Considered fashion and dress important.	.5814
S24	Is motivated by a sense of accomplishment.	.5642
S30	Sees high school as a means of achieving life's goals.	.5188
S33	Is easily influenced by peers.	.3997
Status		
S5	Is fun to be around.	.7496
S6	Is good with concrete concepts.	.6408
S20	Feels good about him/herself.	.6092
S7	Know what he or she wants from life.	.5924
S13	Show respect for teachers.	.5828
S19	Is interested in life.	.5127
S4	Is motivated by material rewards.	.4152
Leadership		
S22	Considers grades important.	.6923
S9	Is popular at school.	.6750
S23	Feels his/her high school is important.	.6669
S2	Exemplifies what his or her school stands for.	.6102
S12	Is a leader in school.	.5153
Socioeconomic Status		
S18	Has college-educated parents.	.7591
S31	Is from middle to upper socio-economic class.	.6724

Table 4 continued

Factor	Statement	Correlation Coefficient
S10	Plans to go to college.	.6629
Career Orientation		
S7	Knows what he or she wants from life.	.6998
S3	Displays above average intelligence in class.	.5733
S15	Is sure about his/her career.	.5079

Table 5

Items Placed in Each Factor and Correlation Coefficients Associated with That Factor: Stereotypes of CTE Teachers

Factor	Statement	Correlation Coefficient
Qualifications		
T2	Has formal training in pedagogy (instruction)	.7563
T1	Possesses a bachelor's degree	.7361
T7	Exemplifies what his or her school stands for.	.6176
T10	Possesses a master's degree.	.5940
T6	Is interested in the social aspects of school.	.5618
T11	Would be perceived as having a lower status by other teachers.	-.0076
Practicality		
T4	Is more of a practitioner than a theorist.	.5703
T3	Has lots of on-the-job experience.	.5286
T8	Is good with concrete concepts.	.3798
T5	Is not involved in the school's extracurricular activities.	.1038
Socialization		
T9	Is a leader in the school.	.6045
T12	Is above average in intelligence.	.6045

Table 6

*Items Placed in Each Factor and Correlation Coefficients Associated with That Factor:
Stereotypes of CTE Programs*

Factor	Statement	Correlation Coefficient
Utility		
P15	Does a good job of preparing people for meaningful employment..	.7579
P17	Is a good return on investment.	.7346
P16	Provides a seamless transition to employment.	.6284
P12	Has a strong association with Virginia's SOL.	.5330
P1	All students can benefit from it.	.3196
Student Composition		
P2	Is better suited for students who work well with their hands.	.5995
P4	Is for students who do not perform well in the basic skill area.	.5633
P6	Its enrollment is typically students with a blue-collar or agriculture background.	.5899
P13	Is remedial in nature	.5020
Program Quality		
P14	Focuses on occupations that aren't in demand.	.5433
P11	Is outdated.	.4565
P5	Is expensive to maintain.	.4091
P8	Is isolated from the rest of the school.	.3713
Focus		
P10	Is for college bound students.	.6246
P3	Is for students who have above average intelligence.	.5096
P9	Provides for the education of the whole person.	.4696
P7	Is for students who plan to enter high skill/ high wage occupations.	.4242

Research Question Two

What are the meta-stereotypes of local CTE administrators regarding the stereotypes of CTE students, teachers, and programs held by Virginia Department of Education administrators? The questionnaire measuring meta-stereotypes was originally sent to 93 of the 137 local CTE administrators working throughout the Commonwealth of Virginia. Of the 75 questionnaires that were returned, only 70 were usable. Before the end of the first phase of data collection, three of the individuals who responded failed to meet ingroup criteria and were replaced. One completed instrument was received after data collection ceased and that information was not used in the final data analysis. During the second phase of data collection, one of the individuals who responded failed to meet ingroup criteria; however this individual was not replaced because the minimum desired response rate was already met, as discussed in Chapter 3. The information provided by the aforementioned individual was not used in the final data analysis.

The questionnaire used to measure meta-stereotypes paralleled the questionnaire used to measure stereotypes, with the exception of the directions. The directions asked the local CTE administrators to estimate how they thought a typical VDOE administrator would respond to the survey. In other words, the local CTE administrators were providing their perceptions, as to how they thought CTE students, teachers, and programs were stereotyped by Virginia Department of Education administrators. As discussed in Chapter 3, all of the items with means probabilities of greater than 60% were considered to be meta-stereotypes and are listed in Table 7. It should be noted that the mutually exclusive contradiction of items were also considered meta-stereotypes if the items had a mean probability of less than 40%. These items are listed in Table 8.

Table 7

Mean Probabilities for Items Considered to be Meta-stereotypes

Item	Statement	Mean Probability
S17	Enjoys non-academic classes more than academic ones.	79.85%
S6	Is good with concrete concepts.	71.57%
S4	Is motivated by material rewards.	69.86%
S5	Is fun to be around.	65.29%
S19	Is interested in life.	63.00%
S33	Is easily influenced by peers.	61.57%
S26	Is interested in how others feel about him/her.	60.57%
S20	Feels good about him/herself.	60.14%
T8	Is good with concrete concepts.	83.00%
T4	Is more of a practitioner than a theorist.	80.86%
T3	Has lots of on-the-job experience.	79.14%
T1	Possesses a bachelor's degree.	70.57%
T2	Has formal training in pedagogy.	70.14%
T7	Exemplifies what his or her school stands for.	68.27%
T12	Is above average in intelligence.	65.86%
P5	Is expensive to maintain.	73.14%
P2	Is better suited for students who work well with their hands.	72.43%
P1	All students can benefit from it.	72.00%
P15	Does a good job of preparing people for meaningful employment.	69.29%
P17	Is a good return on investment.	66.43%
P16	Provides a seamless transition to employment.	62.14%
P6	Its enrollment is typically students with a blue-collar or agriculture background.	62.00%
P9	Provides for the education of the whole person.	60.14%

Regarding CTE students, most of the items identified as meta-stereotypes depicted them as having characteristics similar to those of other students. However, endorsement of the statements “enjoys non-academic classes more than academic ones” and “is good with concrete concepts” demonstrated the some of the traditional stereotypical qualities of CTE students. Regarding CTE teachers, the meta-stereotypes were quite positive. However, the statements “is more of a practitioner than a theorist” and “is good with concrete concepts” could both be considered traditional stereotypical qualities of CTE teachers.

Regarding CTE programs, the statements “is expensive to maintain,” “its enrollment is typically students from a blue-collar or agriculture background,” and “is better suited for student who work well with their hands,” and “provides for the education of the whole person” are stereotypes identified in the literature and differentiate CTE from other educational programs (Field, 1984; Gray & Herr, 1998). These meta-stereotypes are an indication that local CTE administrators thought Virginia Department of Education administrators may possess some of the traditional stereotypes of CTE programs identified in previous literature.

As stated earlier, the mutually exclusive contradiction of items with mean probabilities of less than 40% also established stereotypical qualities, thus identifying meta-stereotypes for this part of the study. The criteria used in this methodology paralleled the criteria mentioned earlier in the chapter. Therefore, implicit in the lack of endorsement of certain statements were meta-stereotypes that could be considered somewhat unique to CTE. These items are listed in Table 8. Overall, local CTE administrators thought VDOE administrators stereotyped CTE students as not being

leaders in school, not having college educated parents, and not being from middle to upper socioeconomic class. They also thought VDOE administrators would stereotype CTE teachers as not possessing master’s degrees. They also thought VDOE administrators would stereotype CTE programs as not being outdated and not focusing on occupations not in demand.

Table 8

Items with Mean Probabilities of Less Than 40%

Item	Statement	Mean Probability
S18	Has college educated parents.	34.71%
S12	Is a leader in school.	37.43%
S31	Is from middle to upper socio-economic class.	38.43%
T10	Possesses a master’s degree.	36.29%
P14	Focuses on occupations that aren’t in demand.	31.57%
P11	Is outdated.	37.14%

Note. The stereotype is the mutually exclusive contradiction of the items listed above.

Factor Analysis. Three principle components factor analyses were conducted to determine the nature and number of any underlying patterns that existed in the data. The factor analyses conducted paralleled the statistical procedures used to determine patterns within the data on stereotypes. Once again, a varimax rotation was used to make it easier to identify each variable with a factor. All of the factors identified in this part of the study had Eigen values greater than one and are listed in Table 9. Regarding the meta-stereotypes of local CTE administrators in relation to CTE students, four of the five factors were similar to those established as stereotypes by Kaman (1984) and had items with similar factor loadings. The factor found in this study that was not similar to those established by Kaman was Status; nevertheless it was identified in the previous literature as a stereotype of CTE students (Lotto, 1986; Michigan Vocational-Technical Education

Service, 1985; Raspberry, 1991). It should be noted that only two items loaded on Status and its reliability was low in comparison to the other factors.

Table 9

Eigen Values, Percentage of Variance Accounted for by Each Factor with Varimax Rotation, and Alpha Reliability

Factor Name	Eigen Value	Percentage of Variance	Alpha
<i>Students (S)</i>			
Academics	6.111	18.519	.9135
Socialization	6.095	18.470	.9355
Socioeconomic Status	5.652	17.126	.9264
Career Orientation	3.206	9.717	.8021
Status	1.587	4.809	.4331
<i>Teachers (T)</i>			
Qualifications	3.999	33.327	.8879
Practicality	2.406	20.050	.8142
Socialization	1.842	15.353	.5399
<i>Programs (P)</i>			
Utility	5.689	33.464	.9349
Program Quality	3.403	17.902	.8377
Student Composition	2.759	16.277	.7782

For the part of the questionnaire measuring the meta-stereotypes of local CTE administrators in relation to CTE teachers, three factors were found: Qualifications, Practicality, and Socialization. These factors were nearly identical to the factors identified in the first part of the study. For the part of the questionnaire measuring the meta-stereotypes of local CTE administrators in relation to CTE programs, three distinct factors were identified: Utility, Program Quality, and Student Composition. Once again, these factors were nearly identical to the factors identified in the first part of the study. However, for this part of the study, Program Utility had a higher Eigen Value than Student Composition and therefore those two factors were ranked differently from the part of the study measuring stereotypes.

Once the 62 items were placed in their respective factors, a reliability test of the factors was conducted. Cronbach's alpha was the statistic used to test the reliability of each factor. As indicated in Table 9, the alpha scores for the factors in all three parts of the instrument were high to moderate, ranging from .9355 for Socialization in the part of the instrument measuring the stereotypes of CTE students to .4331 for Status in the part of the instrument measuring the stereotypes of CTE programs.

Once the factors were determined, the next step was to determine which items belonged with which factors. The researcher determined the factor loading of each statement by identifying which factor contained the highest factor loading for a particular item. Tables 10, 11, and 12 list the factors and the statements that had the highest factor loadings for each item. Those tables also list each item's correlation coefficient with that factor.

Table 10

*Items Placed in Each Factor and Correlation Coefficients Associated with That Factor:
CTE Students*

Factor	Statement	Correlation Coefficient
Academics		
S28	Would be perceived as having a low status by other students.	.7741
S27	Will need remedial help in high school.	.7517
S29	Has a high absentee rate.	.7334
S21	Is difficult to motivate.	.7323
S1	Has disciplinary problems.	.7303
S14	Would be rated in the lower third of the class.	.6838
S8	Has difficulty with abstract concepts.	.6374
S11	Is bored with school.	.6114
S16	Does not perform well in the basic skills areas.	.6076
S17	Enjoys non-academic classes more than academic ones.	.5766
Socialization		
S30	Sees high school as a means of achieving life's goals.	.8295
S20	Feels good about him/herself.	.8213
S23	Feels his/her high school is important.	.7830
S13	Shows respect for teachers.	.7776
S19	Is interested in life.	.7749
S24	Is motivated by a sense of accomplishment.	.7647
S26	Is interested in how others feel about him/her.	.7419
S25	Is interested in the social aspect of school.	.7288
Socioeconomic Status		
S10	Plans to go to college.	.8256
S22	Considers grades important.	.7963
S3	Displays above average intelligence in class.	.7709
S9	Is popular at school.	.7654
S12	Is a leader in school.	.7651
S32	Considers fashion and dress important.	.7515
S2	Exemplifies what his or her school stands for.	.7131
S31	Is from middle to upper socio-economic class.	.6239
S18	Has college-educated parents.	.6072
Career Orientation		
S7	Knows what he or she wants from life.	.6986
S6	Is good with concrete concepts.	.6478
S5	Is fun to be around	.5473
S15	Is sure about his or her career.	.5746

Table 10 continued

Factor	Statement	Correlation Coefficient
Status		
S4	Is motivated by material rewards.	.2771
S33	Is easily influenced by peers.	.2771

Table 11

*Items Placed in Each Factor and Correlation Coefficient Associated with That Factor:
CTE Teachers*

Factor	Statement	Correlation Coefficient
Qualifications		
T12	Is above average in intelligence.	.7802
T7	Exemplifies what his or her school stands for.	.7778
T9	Is a leader in the school.	.7301
T2	Has formal training in pedagogy (instruction)	.6468
T1	Possesses a bachelor's degree	.6246
T10	Possesses a master's degree.	.6243
T6	Is interested in the social aspects of school.	.6084
Practicality		
T4	Is more of a practitioner than a theorist.	.7141
T3	Has lots of on-the-job experience.	.7023
T8	Is good with concrete concepts.	.5912
Socialization		
T5	Is not involved in the school's extracurricular activities.	.3715
T11	Would be perceived as having a lower status by other teachers.	.3715

Table 12

*Items Placed in Each Factor and Correlation Coefficient Associated with That Factor:
CTE Programs*

Factor	Statement	Correlation Coefficient
Student Composition		
P17	Is a good return on investment.	.8349
P12	Has a strong association with Virginia's SOL.	.8137
P10	Is for college bound students.	.8086
P1	All students can benefit from it.	.8069
P15	Does a good job of preparing people for meaningful employment.	.8061
P9	Provides for the education of the whole person.	.7763
P16	Provides a seamless transition to employment.	.7101
P3	Is for students who have above average intelligence.	.6983
P7	Is for students who plan to enter high skill/ high wage occupations.	.5558
Program Quality		
P11	Is outdated.	.7377
P14	Focuses on occupations that aren't in demand.	.6632
P13	Is remedial in nature.	.6494
P8	Is isolated from the rest of the school.	.6322
Career Orientation		
P6	Its enrollment is typically students with a blue-collar or agriculture background.	.7302
P2	Is better suited for students who work well with their hands.	.6078
P4	Is for students who do not perform well in the basic skill area.	.5471
P5	Is expensive to maintain.	.4940

Research Question Three

What is the accuracy of local CTE administrators' meta-stereotypes (meta-accuracy)? In order to establish meta-accuracy, it was necessary to determine if the ingroup and outgroup had similar patterns of responses to the instrument. This was done through a series of factor analyses. Essentially, if the patterns of responses were different, then local CTE administrators were not able to accurately predict how Virginia Department of Education administrators would respond to the survey. In other words, the meta-stereotypes of the local CTE administrators would not be accurate. Each of the parallel factor analyses were compared using a factoring technique known as the pooled data method. This factor comparison technique helped determine if both samples had the same factor structure. The data for the two samples were combined and a dummy variable whose coding represented ingroup and outgroup membership was added. All factors with loadings on the dummy variables with values of greater than .2500 were considered to be differences between the two groups. For this section, items were allowed to be placed with more than one factor, if the second factor loaded on the dummy variable.

For the part of the instrument measuring the stereotypes of CTE students, six factors were identified using the pooled data method (Student section of Table 13). The factor loadings of each statement are listed in Table 14. The first five factors failed to load on the dummy variable, indicating that the factor structure was similar for the two groups. However, for the Leadership factor, the loading of .821 on the dummy variable established leadership as an area in which there was a difference between the two groups. Because of this, it would be reasonable to conclude that on the items that measured the

leadership of CTE students, there was a difference between how the Virginia Department of Education administrators responded and how local CTE administrators predicted they would respond. The items in the Leadership factor were: “exemplifies what his or her school stands for,” “displays above average intelligence in the classroom,” “is popular at school,” “feels good about him/herself,” and “is interested in how others feel about him/her.” For the aforementioned items, the criteria established to determine meta-accuracy indicated no difference; however, when comparing the mean probabilities of the ingroup and outgroup, each of the items had a difference of at least 5%. Table 15 lists the items placed in their respective factors and each item’s correlation coefficient.

Table 13

Eigen Values, Percentage of Variance, and Alpha Reliability Levels: Meta-accuracy

Factor Name	Eigen Value	Percentage of Variance	Alpha
<i>Students (S)</i>			
Academics	6.173	18.157	.9083
Socioeconomic Status	5.284	15.542	.9142
Socialization	4.293	12.626	.8706
Career Orientation	3.673	10.802	.8420
Status	1.542	4.536	.3489
Leadership*	1.325	3.898	.8409
<i>Teachers (T)</i>			
Qualifications	4.061	31.238	.8805
Practicality	2.254	17.341	.7889
Socialization	1.625	12.501	.4701
Degree*	1.112	8.553	.7420
<i>Programs (P)</i>			
Student Composition	4.502	25.012	.8824
Life Preparation	3.303	18.353	.8208
Career Orientation	2.666	14.811	.8442
Isolation*	1.432	7.957	.6274

*Established as an area of difference between the ingroup and outgroup.

Table 14

Correlation Coefficients of Each Factor with Each Question Regarding the Meta-accuracy for CTE Students

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Dummy	-.218	.008	.004	-.004	-.006	.821
S1	.718	-.149	-.008	-.008	-.001	-.211
S2	-.164	.656	.230	.248	-.004	.125
S3	-.182	.648	.281	.345	-.004	.136
S4	.140	.135	.195	.295	.626	.215
S5	-.188	.362	.154	.629	.155	.009
S6	.116	.118	.236	.766	.006	.007
S7	.001	.320	.152	.761	-.008	-.115
S8	.605	.104	-.004	-.009	.002	-.203
S9	-.159	.682	.201	.329	.198	.196
S10	-.185	.707	.305	.225	-.003	-.174
S11	.711	-.105	.264	.003	-.194	.008
S12	-.004	.745	.120	.149	.102	.169
S13	-.410	.354	.338	.402	.101	-.001
S14	.718	-.169	-.009	.005	.147	-.001
S15	.134	.157	-.003	.706	-.146	-.206
S16	.710	-.113	-.169	.124	.115	-.123
S17	.613	-.204	-.005	.191	.148	-.170
S18	-.173	.668	.162	.149	-.007	-.001
S19	-.213	.213	.484	.471	.324	.127
S20	-.241	.255	.503	.552	.118	.200
S21	.729	-.224	-.261	-.009	.171	-.008
S22	-.397	.563	.462	.179	.006	-.009
S23	-.310	.510	.537	.225	.005	-.006
S24	-.007	.248	.776	.303	-.155	.003
S25	-.128	.312	.758	.004	.183	-.004
S26	-.120	.216	.802	.009	.251	.131
S27	.799	-.009	.008	-.007	.178	-.002
S28	.813	-.122	-.162	-.136	-.149	.009
S29	.731	-.144	-.305	-.001	.007	.002
S30	-.177	.384	.600	.331	.001	-.255
S31	-.204	.672	.134	.111	.007	-.301
S32	-.009	.570	.444	.001	.258	.008
S33	.313	.009	.184	-.210	.721	.004

Table 15

Items Placed in Each Factor and Correlation Coefficients Associated with That Factor

Factor	Statement	Correlation Coefficient
Academics		
S28	Would be perceived as having a low status by other students.	.7521
S21	Is difficult to motivate.	.7418
S27	Will need remedial help in high school.	.7369
S29	Has a high absentee rate.	.7023
S16	Does not perform well in the basic skills areas.	.6660
S1	Has disciplinary problems.	.6957
S14	Would be rated in the lower third of the class.	.6932
S17	Enjoys non-academic classes more than academic ones.	.6119
S11	Is bored with school.	.5615
S8	Has difficulty with abstract concepts.	.5412
Socioeconomic Status		
S22	Considers grades important.	.7761
S23	Feels his/her high school is important.	.7565
S9	Is popular at school.	.7522
S3	Displays above average intelligence in class.	.7521
S10	Plans to go to college.	.7234
S2	Exemplifies what his or her school stands for.	.7094
S12	Is a leader in school.	.6718
S32	Considered fashion and dress important.	.6302
S18	Has college-educated parents.	.5791
Socialization		
S26	Is interested in how others feel about him/her.	.7576
S25	Is interested in the social aspects of the school.	.7273
S24	Is motivated by a sense of accomplishment.	.7155
S30	Sees high school as a means of achieving life's goals.	.6895
S19	Is interested in life.	.6022
Career Orientation		
S5	Is fun to be around.	.7098
S20	Feels good about him/herself.	.6737
S7	Know what he or she wants from life.	.6396
S6	Is good with concrete concepts.	.6250
S13	Show respect for teachers.	.5998
Status		
S4	Is motivated by material rewards.	.3171
S33	Is easily influenced by his/her peers.	.3171

Table 15 Continued

Factor	Statement	Correlation Coefficient
Leadership		
S3	Displays above average intelligence in class.	.7485
S9	Is popular at school.	.6795
S2	Exemplifies what his or her school stands for.	.6650
S20	Feels good about him/herself.	.6331
S26	Is interested in how others feel about him/her.	.5395

For the part of the questionnaire measuring the stereotypes of CTE teachers, four factors were identified: Qualifications, Practicality, Socialization, and Degree. The first three factors did not load on the dummy variable. Therefore, the first three factors indicated that both the ingroup and outgroup had a similar pattern of responses on their respective questionnaires (Teacher section of Table 13). Coincidentally, Qualifications, Practicality, and Socialization existed separately for each group and the items had nearly the same factor loadings. However, one area of difference was found. Neither the outgroup, nor the ingroup had a factor similar to Degree. Because the dummy variable had a factor loading of .944 on Degree, it established a difference between the ingroup and outgroup in terms of the degrees a typical CTE teacher possesses. The two items included in Degree were: “possesses a bachelor’s degree” and “possesses a master’s degree.” Even though high meta-accuracy was established with the statement regarding the bachelor’s degrees, there was a difference in the mean probabilities of greater than 5%. Low meta-accuracy was established as local CTE administrators thought that VDOE administrators would stereotype CTE teachers as not possessing master’s degrees, which was not the case.

Table 16

Correlation Coefficients of Each Factor with Each Question Regarding the Meta-accuracy for CTE Teachers

	Factor 1 Qualifications	Factor 2 Practicality	Factor 3 Socialization	Factor 4 Degree
Dummy	.104	-.005	-.005	.944
T1	.801	.006	.146	.150
T2	.810	.001	.009	-.005
T3	.007	.874	.008	.009
T4	-.005	.849	.205	-.004
T5	-.303	.132	.637	.100
T6	.669	.005	-.242	.005
T7	.751	.239	-.339	-.006
T8	.326	.739	-.106	-.202
T9	.680	.251	-.421	-.148
T10	.793	-.008	-.005	.239
T11	.006	.004	.834	-.145
T12	.663	.236	-.290	-.168

Table 17

Items Placed in Each Factor and Correlation Coefficients Associated with That Factor

Factor	Statement	Correlation Coefficient
Qualifications		
T7	Exemplifies what his or her school stands for.	.7552
T9	Is a leader in the school.	.6956
T10	Possesses a master's degree.	.6768
T2	Has formal training in pedagogy (instruction)	.6541
T12	Is above average in intelligence.	.6519
T1	Possesses a bachelor's degree	.6431
T6	Is interested in the social aspects of school.	.6046
Practicality		
T3	Has lots of on-the-job experience.	.6870
T4	Is more of a practitioner than a theorist.	.6475
T8	Is good with concrete concepts.	.5619
Socialization		
T5	Is not involved in the school's extracurricular activities.	.3090
T11	Would be perceived as having a lower status by other teachers.	.3090
Degree		
T2	Possesses a bachelor's degree.	.3503
T10	Possesses a master's degree.	.3503

For the part of the questionnaire measuring the stereotypes of CTE programs, four factors were found: Student composition, Program quality, School-to-work, and Isolation. These factors and their respective Eigen values are listed in the Programs section of Table 13. The factor loadings on the dummy variable (Table 18) established there was no difference between the ingroup and the outgroup in their pattern of responses for the first three factors. However, the loading of Isolation on the dummy variable indicated a difference between the ingroup and outgroup regarding the isolation of CTE programs and the enrollment of CTE programs. With the statement “is isolated from the rest of the school” local CTE administrators predicted that VDOE administrators would not endorse that as a stereotype and they did. With the statement “its enrollment is typically students with a blue-collar or agriculture background,” local CTE administrators felt that VDOE administrators would endorse it as a stereotype and they did not. Low meta-accuracy was demonstrated with the aforementioned two items.

Table 18

Correlation Coefficients of Each Factor with Each Question Regarding the Meta-accuracy for CTE Programs

	Factor 1 Utility	Factor 2 Program Quality	Factor 3 Transitions	Factor 4 Isolation
Dummy	.004	-.247	.004	.881
P1	.716	-.165	.196	.117
P2	-.225	.711	.198	-.294
P3	.759	-.001	.101	.005
P4	-.008	.725	-.102	-.002
P5	.123	.579	-.190	-.242
P6	-.204	.790	-.009	.156
P7	.633	-.006	.133	.248
P8	.004	.560	-.250	.551
P9	.796	-.139	.004	-.004
P10	.823	-.273	.003	-.219
P11	-.101	.473	-.637	.003
P12	.707	-.009	.321	-.161
P13	-.131	.627	-.327	-.002
P14	-.142	.380	-.764	-.007
P15	.630	-.002	.673	.003
P16	.480	.188	.692	-.115
P17	.665	-.008	.560	.115

Table 19

Items Placed in Each Factor and Correlation Coefficients Associated with That Factor

Factor	Statement	Correlation Coefficient
Student Composition		
P10	Is for college bound students.	.7525
P17	Is a good return on investment.	.7074
P9	Provides for the education of the whole person.	.7065
P1	All students can benefit from it.	.6743
P3	Is for students who have above average intelligence.	.6616
P12	Has a strong association with Virginia's SOL.	.6032
P7	Is for students who plan to enter high skill/ high wage occupations.	.5322
Program Quality		
P6	Its enrollment is typically students with a blue-collar or agriculture background.	.6444
P13	Is remedial in nature.	.6070
P11	Is outdated.	.5830
P4	Is for students who do not perform well in the basic skill areas.	.5784
P14	Focuses on occupations that aren't in demand.	.5537
P8	Is isolated from the rest of the school.	.4805
P2	Is better suited for students who work well with their hands.	.4580
P5	Is expensive to maintain.	.4342
School to Work		
P15	Does a good job of preparing people for meaningful employment.	.7320
P16	Provides a seamless transition to employment.	.7320
Isolation		
P6	Its enrollment is typically students with a blue-collar or agriculture background.	.4602
P8	Is isolated from the rest of the school.	.4602

This study coupled the pooled data method with a more descriptive approach to examine the nature of the aforementioned differences. Means for each of the items on both questionnaires were calculated. In establishing the stereotypes of CTE held by Virginia Department of Education administrators, any item with a mean probability greater than 60% was identified as a stereotype. The mutually exclusive contradictions of items with mean probabilities of less than 40% were also identified as stereotypes. Schneider (2004) established the relevancy of using percentage measures as a method of establishing stereotypes. In establishing the meta-stereotypes held by local CTE administrators, a parallel approach was used.

The comparison of the stereotypes to the meta-stereotypes revealed four possible scenarios for each item: (a) endorsement of a stereotype by VDOE administrators, and predicted endorsement of a stereotype by local CTE administrators (Table 20), (b) non-endorsement of a stereotype by VDOE administrators, and predicted non-endorsement of the stereotype by local CTE administrators (Table 21), (c) non-endorsement of a stereotype by VDOE administrators, and predicted endorsement of a stereotype by local CTE administrators (Table 22), and (d) endorsement of a stereotype by VDOE administrators, and predicted non-endorsement of the stereotype by local CTE administrators (Table 23). Items listed in Table 20 and Table 21 indicated a high degree of meta-accuracy. Items listed in Table 22 and Table 23 indicated a low degree of meta-accuracy.

Table 20

Endorsement of Stereotype by VDOE Administrators and Predicted Endorsement of Stereotype by Local CTE Administrators

Item	Statement
S4	Is motivated by material rewards.
S5	Is fun to be around.
S6	Is good with concrete concepts.
S17	Enjoys non-academic classes more than academic ones.
S19	Is interested in life.
S20	Feels good about him/herself.
S26	Is interested in how others feel about him/her.
S31	Is not from middle to upper socio-economic class. *
T1	Possesses a bachelor's degree.
T2	Has formal training in pedagogy (instruction).
T3	Has lots of on-the-job experience.
T4	Is more of a practitioner than a theorist.
T7	Exemplifies what his or her school stands for.
T8	Is good with concrete concepts.
T12	Is above average in intelligence.
P1	All students can benefit from it.
P9	Provides for the education of the whole person.
P11	Is not outdated. *
P13	Does not focus on occupations that aren't in demand. *
P15	Does a good job of preparing people for meaningful employment.
P17	Is a good return on investment.

* Originally stated in positive terms and endorsed because of a mean probability less than 40%.

Twenty-one of the 62 items were endorsed as stereotypes of CTE students, teachers, and programs by Virginia Department of Education administrators, while at the same time being predicted to be stereotypes by local CTE administrators (meta-stereotypes). These items are listed in Table 20. For these items, a high degree of meta-accuracy was evident. One of the items was considered both a meta-stereotype and a stereotype because its mean probability was less than 40%. CTE students not being from middle to upper socio-economic class was established in this manner and is a stereotype identified in the literature. Seven out of the 12 statements regarding the stereotypes of

CTE teachers were listed in this category, as were 8 of the 33 for CTE students, and 6 of the 17 for CTE programs.

Table 21

Non-endorsement of Stereotype by VDOE Administrators and Predicted Non-endorsement of Stereotype by Local CTE Administrators

Item	Statement
S2	Exemplifies what his or her school stands for.
S3	Displays above average intelligence in class.
S7	Knows what he or she wants from life.
S8	Has difficulty with abstract concepts.
S9	Is popular at school.
S11	Is bored with school.
S14	Would be rated in the lower third of the class.
S15	Is sure about his/her career.
S16	Does not perform well in the basic skills areas.
S21	Is difficult to motivate
S22	Considers grades important.
S23	Feels his/her high school is important.
S27	Will need remedial help in high school.
S28	Would be perceived as having a low status by other students.
S30	See high school as a means of achieving life's goals.
S32	Considers fashion and dress important.
T5	Is not involved in the extracurricular activities at school.
T6	Is interested in the social aspects of school.
T8	Is a leader in the school.
T11	Would be perceived as having a lower status by other teachers.
P3	Is for students who have above average intelligence.
P4	Is for students who do not perform well in the basic skill areas.
P10	Is for college bound students.
P12	Has a strong association with Virginia's Standards of Learning.

Twenty-four of the 62 items were not endorsed as stereotypes by Virginia Department of Education administrators and were predicted not to be endorsed as stereotypes by local CTE administrators (Table 21). For these items, a high degree of meta-accuracy was evident.

Table 22

Non-endorsement of Stereotype by VDOE Administrators and Predicted Endorsement of Stereotype by Local CTE Administrators

Items	Statement
S12	Is not a leader in school.
S18	Does not have college-educated parents.
S33	Is easily influenced by his/her peers.
T10	Does not possess a master's degree.
P2	Is better suited for students who work well with their hands.
P5	Is expensive to maintain.
P6	Its enrollment is typically students with a blue-collar or agriculture background.
P16	Provides a seamless transition to employment.

Table 22 lists the eight items predicted to be stereotypes by local CTE administrators, but not endorsed as stereotypes by Virginia Department of Education administrators. These items demonstrated a low degree of meta-accuracy for local CTE administrators. Three of the eight items were from the part of the questionnaire that measured the stereotypes of CTE students and had been established as stereotypes by previous literature.

Table 23.

Endorsement of Stereotype by VDOE Administrators and Predicted Non-endorsement of Stereotype by Local CTE Administrators.

Items	Statement
S1	Does not have disciplinary problems.
S10	Does not plan to go to college.
S13	Shows respect for teachers.
S24	Is motivated by a sense of accomplishment in school.
S25	Is interested in the social aspects of the school.
S28	Does not have a high absentee rate.
P7	Is for students who plan to enter high skill/high wage occupations.
P8	Is isolated from the rest of the school.
P13	Is not remedial in nature.

The nine items that were endorsed as stereotypes by VDOE administrators, but predicted not to be endorsed as stereotypes by local CTE administrators also demonstrated a low degree of meta-accuracy and are listed in Table 23.

Summary

For the outgroup, questionnaires were mailed to 137 Virginia Department of Education administrators and a response rate of 56.2% was achieved; however only 61 of the questionnaires were used in the final data analysis. For the ingroup, questionnaires were mailed to 93 local CTE administrators and a response rate of 78% was achieved; however only 70 questionnaires were used in the final data analysis. The follow-up study of the non-respondents indicated no observable differences between respondents and non-respondents.

A summary and interpretation of the data indicated that Virginia Department of Education administrators have stereotypes of CTE students, teachers, and programs. Some of the more interesting stereotypes were as follows; CTE students: (a) enjoy non-academic classes more than academic ones, (b) are good with concrete concepts, (c) are

not from middle to upper socio-economic class. The typical CTE teacher is: (a) more of a practitioner than theorist, (b) good with concrete concepts, and (c) has lots of on-the-job experience. CTE programs are: (a) isolated from the rest of the school, (b) are a good return on investment, (c) do a good job of preparing people for meaningful employment, and (d) all students can benefit from it.

The summary and interpretation of the data also indicated that local CTE administrators have meta-stereotypes regarding the stereotypes of CTE students, teachers, and programs held by Virginia Department of Education administrators. The meta-stereotypes related to CTE students: (a) are motivated by material rewards, (b) are good with concrete concepts, (c) have difficulty with abstract concepts, (d) do not plan to go to college, (e) enjoy non-academic classes more than academic ones, (f) do not have college educated parents, (g) are not from middle to upper socio-economic class, (h) are easily influenced by their peers, and (i) are not leaders in school. CTE teachers: (a) are good with concrete concepts, (b) have lots of on-the-job experience, and (c) do not possess master's degrees. CTE programs: (a) are for students who work well with their hands, (b) are expensive to maintain, (c) are typically for students with a blue collar or agriculture background, and (d) provide a seamless transition to employment.

The summary and interpretation of the factor analyses indicated that local CTE administrators had varying degrees of meta-accuracy across the three stereotypical areas measured: CTE students, teachers, and programs. Based on the percentage of items that local CTE administrators were able to accurately predict, they had the highest degree of meta-accuracy in predicting the way CTE teachers would be stereotyped by VDOE administrators. With 11 out of the 12 items (91.7%) measuring the stereotypes of CTE

teachers, local CTE administrators had a high degree of meta-accuracy. They had the lowest degree of meta-accuracy in predicting the way VDOE administrators would stereotype CTE programs, as they were only able to predict 10 out of the 17 items (58.8%) in that section. In predicting the way VDOE administrators would stereotype CTE programs, local CTE administrators were accurate with 24 out of the 33 items (72.7%).

The pooled data factor analysis indicated that local CTE administrators underestimated the probability that CTE teachers would be stereotyped as possessing master's degrees; this was reinforced with a comparison of the mean probabilities. The pooled data method also indicated a difference between the ingroup and outgroup in the Leadership factor for CTE students and the Isolation factor for CTE programs. For all of the other factors, a similar pattern of responses existed between the two groups.

As the specific items were examined, differences were found between the meta-stereotypes of local CTE administrators and the actual stereotypes held by VDOE administrators. The meta-stereotypes of local CTE administrators were somewhat inaccurate as they failed to predict the endorsement of certain stereotypes of CTE students. The stereotypes were as follows; CTE students: (a) are motivated by a sense of accomplishment, (b) are interested in the social aspects of the school (c) do not disrespect the teacher, (d) do not have disciplinary problems, (e) do not have high absentee rates, and (f) do not plan to go to college. Local CTE administrators also failed to predict certain stereotypes of CTE programs that were endorsed by VDOE administrators. These stereotypes were as follows; CTE programs are: (a) for students who plan to enter

high skill/ high wage occupations, (b) are isolated from the rest of the school, and (c) are not remedial in nature.

Local CTE administrators also demonstrated low degrees of meta-accuracy as they thought VDOE administrators would endorse certain stereotypes but did not. These inaccurate meta-stereotypes were; CTE students: (a) are not leaders in school, (b) are easily influenced by their peers; (c) do not have college educated parents; CTE teachers do not possess bachelor's degrees; and CTE programs: (a) are better suited for students who work well with their hands, (b) are expensive to maintain, (c) have enrollments of students with a blue-collar or agriculture background, and (d) provide a seamless transition to employment.

Overall, when the meta-stereotypes were not accurate, they were generally more negative than the actual stereotypes. In 15 out of the 17 instances when a low degree of meta-accuracy was evident, the meta-stereotypes could be considered either more negative than the actual stereotypes or demonstrating stereotypical qualities of CTE identified in the literature.

Chapter 5

Summary, Discussion, and Recommendations

Summary

Since the meta-stereotypes of local CTE administrators have behavioral, contextual, and cognitive dimensions, they can and do have an impact on CTE programs. If programmatic behavior within the field of CTE is a function of those meta-stereotypes, then their accuracy is highly significant. The major purpose of this study was to determine the accuracy with which local CTE administrators perceive the stereotypes of CTE students, teachers, and programs held by Virginia Department of Education administrators. This study also explored the meta-stereotypes CTE administrators have regarding the stereotypes of CTE students, teachers, and programs held by Virginia Department of Education administrators, and the stereotypes Virginia Department of Education administrators have of CTE students, teachers, and programs.

This study was conducted because the answers to the research questions will lead to greater ingroup identification, which could lead to more cohesion within CTE (Gomez, 2003). If the meta-stereotypes are proven inaccurate, behavior can be altered to better respond to what actually exists, not what is believed to exist. Essentially, CTE resources will be utilized in a better manner with a higher degree of meta-accuracy and this study exposed the areas where low degrees of meta-accuracy existed. It should be noted that his study investigated the stereotypes, meta-stereotypes, and meta-accuracy regarding CTE students, teachers, and programs. It did not, however, examine the causes or effects of any stereotypes, meta-stereotypes, or degree of meta-accuracy found.

A questionnaire with 62 statements was constructed around the previously established stereotypes of CTE. Thirty-eight of the statements used on the questionnaire were developed by Kaman (1984) coupled with the stereotypical descriptors of CTE identified in the literature. Following a pilot test and revisions based on suggestions made by a panel of experts, the questionnaire was sent to 137 Virginia Department of Education administrators and 93 (3 were replaced) local CTE administrators. Data collection took place over a three week period in the spring of 2004. The data pool for this study consisted of information from 61 VDOE administrators and 70 local CTE administrators. A follow-up study was conducted to ensure that non-respondents did not respond to the survey in a significantly different manner than respondents. No such difference was found in the comparison of the non-respondent groups to respondent groups.

The questionnaire asked participants to rate the probability that a typical CTE student, teacher, or program would exhibit a characteristic represented by a particular statement. Two forms of the questionnaire were used: one measuring stereotypes, and one measuring meta-stereotypes. The two forms were identical except for the instructions. The form that measured stereotypes asked Virginia Department of Education administrators to rate the probability that each of the statements accurately described a typical CTE student, teacher, or program. The form that measured meta-stereotypes asked local CTE administrators to rate how they thought a typical VDOE administrator would respond to the first questionnaire.

Both descriptive and inferential statistics were utilized in the analysis of the data. The descriptive statistics included mean scores for each of the items. Factor analysis was

used to determine the nature of the patterns that existed in the participants' responses. Stereotypes and meta-stereotypes were identified as items (statements) that had mean probabilities of greater than 60% or the mutually exclusive contradiction of items (statements) with mean probabilities of less than 40%. Although the later method of establishing stereotypes was utilized by Sigleman and Tuch (1997), it should be noted that the only way to have complete confidence in responses is to have the positive confirmation of the item stating the actual stereotype. The following stereotypes were established with the mutually exclusive contradiction of statements with less than 40% probability. CTE students: (a) do not have disciplinary problems, (b) do not have a high absentee rate, (c) do not plan to go to college, and (d) are not from middle to upper socio-economic class. The first two stereotypes are very positive and are characteristics that are desired of all students. The last two stereotypes were also established by Kaman (1984) and depict CTE students as having unique characteristics. CTE programs were stereotyped as: (a) not being outdated, (b) not being remedial in nature, and (c) not focusing on occupations not in demand. None of the stereotypes of CTE programs established in the aforementioned manner were identified in the literature.

The following meta-stereotypes were established using the mutually exclusive contradiction of the statements with less than 40% probability. CTE students: (a) are not leaders in school, (b) do not have college-educate parents, (c) are not from middle to upper socio-economic class, all of which were established as stereotypes by Kaman (1984) and depict CTE students as having traditional stereotypical qualities. CTE teachers were thought to be stereotyped as not possessing master's degrees. This was established by Field (1984). Finally, CTE programs were stereotyped as: (a) not being

outdated, and (b) not focusing on occupations not in demand; neither of which were established in the literature.

Meta-accuracy was described as a congruency between the items established as meta-stereotypes and stereotypes and the items not endorsed as stereotypes and predicted not to be endorsed as stereotypes (meta-stereotypes).

A summary of the results of this study was:

1. Virginia Department of Education administrators had stereotypes of CTE students. CTE students were stereotyped as: (a) not planning to go to college, (b) enjoying nonacademic classes more than academic ones, (c) being good with concrete concepts, and (d) not being from middle to upper socio-economic class.

2. Overall, Virginia Department of Education administrators had positive stereotypes of CTE teachers. In fact, one of the previously established stereotypes of CTE teachers was not identified in this present study. The aforementioned stereotype of CTE teachers not having the same level of qualifications as other teachers was established by Field (1984). CTE teachers were stereotyped as: (a) possessing bachelor's degrees and having formal training in pedagogy, (b) having lots of on-the-job training, and (c) being practitioners rather than theorists.

3. Virginia Department of Education administrators had stereotypes of CTE programs. CTE programs were stereotyped as: (a) being a good return on investment, (b) being beneficial to all students, (c) providing for the education of the whole person, and (d) being isolated from the rest of the school.

4. Local CTE administrators possessed meta-stereotypes that indicated VDOE administrators would stereotype CTE students as: (a) being good with concrete concepts,

(b) being motivated by material rewards, (c) enjoying non-academic classes more than academic ones, (d) not being leaders in school, (g) not having college educated parents, (h) not being from middle to upper socio-economic class, and (i) being easily influenced by their peers.

5. The meta-stereotypes of local CTE administrators regarding CTE teachers predicted VDOE administrators would stereotype CTE teachers as: (a) possessing bachelor's degrees, (b) having formal training in pedagogy, (c) being above average in intelligence, (d) having lots of on-the-job experience, (e) being good with concrete concepts, and (f) not possessing master's degrees.

6. The meta-stereotypes of local CTE administrators regarding CTE programs demonstrated stereotypical qualities that were both unique to CTE and could be considered characteristics of other academic programs. Local CTE administrators correctly predicted that VDOE administrators would stereotype CTE programs as: (a) being beneficial to all students, (b) providing for the education of the whole person, (c) providing preparation and a seamless transition to meaningful employment, and (d) being a good return on investment. Yet, some of the stereotypes that were predicted to be endorsed could be considered unique to CTE and were identified in the literature as stereotypical descriptors. These stereotypes were that CTE programs: (a) are expensive to maintain (Field, 1984), (b) are not for college bound students (Field, 1984; Gray & Herr, 1998), and (c) typically have enrollments of students with a blue-collar or agriculture background (Field, 1984; Gray & Herr, 1998).

7. In relation to the meta-accuracy of local CTE administrators, regarding the stereotypes of CTE students held by VDOE administrators, the meta-stereotypes were

accurate with 24 out of the 33 items (72.7%). VDOE administrators endorsed the stereotypes of CTE students: (a) being motivated by a sense of accomplishment, (b) being interested in the social aspects of the school, (c) not disrespecting teachers, and (d) not having a high absentee rate. Local CTE administrators failed to predict these endorsements. Furthermore, local CTE administrators thought that VDOE administrators would stereotype CTE students as: (a) not being leaders in school, (b) not having college educated parents, and (c) being easily influenced by their peers. The aforementioned stereotypes were not endorsed, also indicating low meta-accuracy. Local CTE administrators also demonstrated low meta-accuracy when they failed to predict that VDOE administrators would endorse the stereotype that CTE students do not plan to go to college.

8. In relation to the meta-stereotypes of local CTE administrators regarding the stereotypes of CTE teachers held by VDOE administrators, the meta-stereotypes were accurate with 11 out of the 12 statements (91.7%, all except “possesses a master’s degree”). This indicated a high degree of meta-accuracy. However, a slight difference was noted in the pooled data factor analysis in the Degree Factor. This difference was reinforced as local CTE administrators felt that VDOE administrators would stereotype CTE teachers as not having master’s degree, which was not the case.

9. In relation to the meta-stereotypes of local CTE administrators regarding the stereotypes of CTE programs held by VDOE administrators, the meta-stereotypes were accurate with 10 out of the 17 items (58.8%). Local CTE administrators predicted that VDOE administrators would not endorse the stereotype that CTE programs are isolated from the rest of the school, when in fact they did. This was reinforced with the pooled

data factor analysis, as a difference was found on the Isolation Factor. Local CTE administrators predicted that VDOE administrators would endorse the stereotype that CTE programs provide a seamless transition to employment, and this was not the case. Local CTE administrators incorrectly predicted that VDOE administrators would not endorse the stereotype of CTE programs preparing people for high skill/ high wage occupations. Local CTE administrators predicted that VDOE administrators would endorse the stereotype that CTE programs are for students who work well with their hands, and this was not the case.

Discussion

1. Even though the stereotypes of CTE students, teachers, and programs were mostly positive, some of the traditional stereotypical descriptors of CTE were still evident. Some stereotypes of note were: (a) CTE students do not plan to go to college, (b) CTE students are good with concrete concepts, (c) CTE students enjoy nonacademic classes more than academic ones, (d) CTE students are not from middle to upper socioeconomic class, (e) CTE teachers have lots of on-the-job experience, and (f) CTE programs are isolated from the rest of the school.

2. All of the stereotypes referring to CTE students were similar to the academic stereotype established by Kaman (1984). The stereotype of CTE students not planning to go to college was also established by Brown and Clark (1976), Conroy (1969), Divita (1968), Lotto (1986), and Crowley and Weinrich (1964). The stereotype of CTE students not being from middle to upper socio-economic class was similar to Kaman's socio-economic stereotype and was also established by Divita (1968), Field (1984), Gray and Herr (1998), Lotto (1986), Michigan Vocational-Technical Education Service (1985), and

Raspberry (1991). The stereotype of CTE teachers having lots of on-the-job experience was not identified in the literature. The stereotype of CTE programs being isolated from the rest of the school was established by Divita (1968), Tauber (1979), Hamlin (1967), and Howe (1967).

3. Certain stereotypes of CTE students, teachers, and programs that were identified in the literature were not established in this present study. Some stereotypes not established in this study were: (a) CTE students have difficulty with abstract concepts (Kaman, 1984), (b) CTE students would be rated in the lower third of their class (Brown & Clark 1976; Conroy, 1969; Crowley & Weinrich, 1964; Divita, 1968; Lotto, 1986), (c) CTE students will need remedial help in school (Kaman, 1984), (d) CTE teachers do not have the same qualifications as other teachers (Field, 1984), (e) CTE programs are for students who work well with their hands (Divita, 1968; “What do others think of us?,” 1997), (f) CTE programs are not for college bound students (Divita, 1968; “What do other think of us?,” 1997), (g) CTE programs are remedial in nature (Michigan Vocational-Technical Education Service, 1985; Raspberry, 1991), and (h) CTE programs are not a good return on investment (Field, 1984).

4. The meta-stereotypes of local CTE administrators predicted that VDOE administrators would possess stereotypes that were similar to the stereotypical descriptors of CTE students identified in the literature. Local CTE administrators thought that CTE students would be stereotyped as: (a) not being leaders in school, (b) not having college educated parents, (c) being motivated by material rewards, (d) enjoying nonacademic classes more than academic ones, (e) being easily influenced by his peers, and (f) not being from middle to upper socio-economic class. The meta-stereotypes of local CTE

administrators regarding CTE teachers were generally positive. However, in one instance, they predicted something that could be considered negative, or perhaps realistic, as they thought CTE teachers would be stereotyped as not possessing master's degrees. The meta-stereotypes of local CTE administrators regarding CTE programs predicted the endorsement of stereotypes such as: (a) is a good return on investment, (b) provides for the education of the whole person, and (c) all students can benefit from it. At the same time, local CTE administrators predicted the endorsement of the stereotypes: (a) is expensive to maintain, (b) has enrollment typically of students from blue-collar or agriculture background, and (c) is for students who work better with their hands.

5. Overall, the accuracy of the meta-stereotypes (meta-accuracy) of local CTE administrators varied depending upon what was being measured: the stereotypes of CTE students, teachers, or programs. Local CTE administrators were accurately able to predict the way VDOE administrators would respond to the statements depicting stereotypes of CTE students, teachers, and programs for 45 of the 62 items. Conversely, they were not able to accurately predict 17 out of the 62 statements. Generally, when meta-accuracy was not present, the meta-stereotypes depicted traditional stereotypical descriptors of CTE. This also indicated that the meta-stereotypes were more negative than the actual stereotypes held by VDOE administrators. Although different ingroups and outgroups were used, Rettew, Billman, and Davis (1993), Sigleman and Tuch (1997), and Vorauer, Main, and O'Connell (1998) had similar findings in their studies. The part of the questionnaire with the highest degree of meta-accuracy was the part measuring the stereotypes of CTE teachers. The part of the questionnaire with the lowest degree of meta-accuracy was that measuring the stereotypes of CTE programs.

6. As a result of the factor analyses, it was determined that similar patterns existed in the data for the two groups. Nevertheless, differences were noted in the following factors: (a) Leadership (CTE students), (b) Degree (CTE teachers), and (c) Isolation (CTE programs). It should be noted that the meta-stereotypes regarding the items included in the Leadership Factor were identified as accurate; however all of the items had a difference in mean probability, between the ingroup and the outgroup, of greater than 5%. Only one of the items included in the Degree Factor demonstrated a low degree of meta-accuracy and it was the item “possesses a master’s degree.” However, the other item, “possesses a bachelor’s degree,” was found to have a high degree of meta-accuracy, but still had a difference in mean probability of 7.6%. Both of the items in the Isolation factor were determined to have a low degree of meta-accuracy. All of the items in these factors were predicted to have not as high of a probability than what was actually measured.

Recommendations

Practice

1. Local CTE administrators need to be made aware of the stereotypes Virginia Department of Education (VDOE) administrators have of CTE students, teachers, and programs.
2. Local CTE administrators should be encouraged to maintain close contacts with VDOE administrators and promote their programs and students.
3. In instances where the degree of meta-accuracy was low, local CTE administrators need to alter behavior to better respond to what actually exists, not what is believed to exist.

Research

1. Because meta-accuracy was lowest regarding the stereotypes of CTE programs, highest regarding the stereotype of CTE teachers, and moderate regarding the stereotypes of CTE students, future research should be done to determine the extent to which meta-accuracy actually influences the behavior of local CTE administrators.

2. Previous research studies related to the stereotypical descriptors of CTE have implied the stereotypes of CTE are negative, but no study has actually determined the extent to which those stereotypes are positive or negative. Future research should be done to determine whether the stereotypical descriptors of CTE are viewed as positive or negative.

3. This study determined the accuracy of meta-stereotypes; however, of equal importance in the stereotype/meta-stereotype interaction is the accuracy of stereotypes. Research should be done to determine if the stereotypes that individuals hold of CTE are accurate.

4. Research should also be conducted to determine the stereotypes groups other than VDOE administrators have of CTE. Of particular interest would be parents, business and community leaders, students, and the general public.

5. This study investigated the stereotypes, meta-stereotypes, and meta-accuracy regarding CTE students, teachers, and programs. It did not, however, examine the causes or effects of any stereotypes, meta-stereotypes, or degree of meta-accuracy found. Future research should be done to explore the causes and effects of stereotypes, meta-stereotypes, and degree of meta-accuracy.

6. It should be noted that the only way to have complete confidence in stereotypical responses is to have positive confirmation of the item stating the actual stereotype. Future research attempting to measure stereotypes or meta-stereotypes should avoid using items with the stereotypes stated in opposite terms.

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Appendix A

Institutional Review Board Approval

Institutional Review Board

Dr. David M. Moore
IRB (Human Subjects) Chair
Assistant Vice Provost for Research Compliance
CVM Phase II- Duckpond Dr., Blacksburg, VA 24061-0442
Office: 540/231-4991; FAX: 540/231-6033
email: moored@vt.edu

DATE: February 26, 2004

MEMORANDUM

TO: Konrad Eschenmann Teaching and Learning 467
Eric Lichtenberger EDCT 0467

FROM: David Moore 

SUBJECT: **IRB Exempt Approval:** "The Accuracy of Meta-Stereotypes Applied to Career
and Technical Education" IRB # 04-077

I have reviewed your request to the IRB for exemption for the above referenced project. I concur that the research falls within the exempt status. Approval is granted effective as of February 24, 2004.

cc: File
Department Reviewer Bonnie Billingsly T&L 0313

Appendix B
Stereotypes of CTE Instrument

Please answer the following two questions by circling either yes or no.

Have you ever earned a bachelor’s, master’s, or any other post master’s degree in career and technical education, vocational education, workforce education, occupational studies, or any other career and technical related field? **YES/ NO (circle one)**

Do you have any teaching experience in any of the following career and technical education service areas: business, marketing, agriculture, technology, trade and industrial, family and consumer sciences, health and medical science? **YES/ NO (circle one)**

Section I: Please indicate the probability that each of these statements accurately describes a typical secondary career and technical education student. (Check or place an “x” in the box with the corresponding probability for each item).

	0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
1. Has disciplinary problems.											
2. Exemplifies what his or her school stands for.											
3. Displays above average intelligence in class.											
4. Is motivated by material rewards.											
5. Is fun to be around.											
6. Is good with concrete concepts.											
7. Knows what he or she wants from life.											
8. Has difficulty with abstract concepts.											
9. Is popular at school.											
10. Plans to go to college.											
11. Is bored with school.											
12. Is a leader in school.											
13. Shows respect for teachers.											
14. Would be rated in the lower third of the class.											
15. Is sure about his/her career.											
16. Does not perform well in the basic skills areas.											
17. Enjoys non-academic classes more than academic ones.											
18. Has college-educated parents.											
19. Is interested in life.											
20. Feels good about him/herself.											

Section I (continued): Please indicate the probability that each of these statements accurately describes a typical secondary career and technical education student.

	0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
21. Is difficult to motivate.											
22. Considers grades important.											
23. Feels his/her high school is important.											
24. Is motivated in school by a sense of accomplishment.											
25. Is interested in the social aspects of school.											
26. Is interested in how others feel about him/her.											
27. Will need remedial help in high school.											
28. Would be perceived as having a low status by other students.											
29. Has a high absentee rate.											
30. See high school as a means of achieving life's goals.											
31. Is from middle to upper socio-economic class.											
32. Considers fashion and dress important.											
33. Is easily influenced by peers.											

Section II: Please indicate the probability that each of these statements accurately describes a typical secondary career and technical education teacher.

	0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
34. Possesses a bachelor's degree.											
35. Has formal training in pedagogy (instruction).											
36. Has lots of on-the-job experience.											
37. Is more of a practitioner than a theorist.											
38. Is not involved in the school's extracurricular activities.											
39. Is interested in the social aspects of school.											
40. Exemplifies what his or her school stands for.											
41. Is good with concrete concepts.											
42. Is a leader in the school.											
43. Possesses a master's degree.											
44. Would be perceived as having a lower status by other teachers.											

45. Is above average in intelligence.												
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Section 3: Please indicate the probability that each of these statements accurately describes a typical secondary career and technical education program.

	0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
46. All students can benefit from it.											
47. Is better suited for students who work well with their hands.											
48. Is for students who have above average intelligence.											
49. Is for students who do not perform well in the basic skill areas.											
50. Is expensive to maintain.											
51. Its enrollment is typically students with a blue-collar or agriculture background.											
52. Is for students who plan to enter high skill/ high wage occupations.											
53. Is isolated from the rest of the school.											
54. Provides for the education of the whole person.											
55. Is for college bound students.											
56. Is outdated.											
57. Has a strong association with Virginia's SOL.											
58. Is remedial in nature.											
59. Focuses on occupations that aren't in demand.											
60. Does a good job of preparing people for meaningful employment.											
61. Provides a seamless transition to employment.											
62. Is a good return on investment.											

Appendix C
Meta-stereotype Instrument

Please answer the following two questions by circling either yes or no.

Have you ever earned a bachelor’s, master’s, or any other post master’s degree in career and technical education, vocational education, workforce education, occupational studies, or any other career and technical related field? **YES/ NO (circle one)**

Do you have any teaching experience in any of the following career and technical education service areas: business, marketing, agriculture, technology, trade and industrial, family and consumer sciences, health and medical science? **YES/ NO (circle one)**

PLEASE READ*The following instrument was given to a sample of state-level administrators working at the Virginia Department of Education in Richmond (excluding the Office of CTE). How do you a typical VDOE administrator would respond to the following 62 items? Remember, you are not providing your direct beliefs, but how you think the typical VDOE administrator responded. *****

Section I: Please indicate the probability that each of these statements accurately describes a typical secondary career and technical education student. (Check or place an “x” in the box with the corresponding probability for each item).

	0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
1. Has disciplinary problems.											
2. Exemplifies what his or her school stands for.											
3. Displays above average intelligence in class.											
4. Is motivated by material rewards.											
5. Is fun to be around.											
6. Is good with concrete concepts.											
7. Knows what he or she wants from life.											
8. Has difficulty with abstract concepts.											
9. Is popular at school.											
10. Plans to go to college.											
11. Is bored with school.											
12. Is a leader in school.											
13. Shows respect for teachers.											
14. Would be rated in the lower third of the class.											
15. Is sure about his/her career.											
16. Does not perform well in the basic skills areas.											
17. Enjoys non-academic classes more than academic ones.											
18. Has college-educated parents.											
19. Is interested in life.											

20. Feels good about him/herself.												
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Section I (continued): Please indicate the probability that each of these statements accurately describes a typical secondary career and technical education student.

	0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
21. Is difficult to motivate.											
22. Considers grades important.											
23. Feels his/her high school is important.											
24. Is motivated in school by a sense of accomplishment.											
25. Is interested in the social aspects of school.											
26. Is interested in how others feel about him/her.											
27. Will need remedial help in high school.											
28. Would be perceived as having a low status by other students.											
29. Has a high absentee rate.											
30. See high school as a means of achieving life's goals.											
31. Is from middle to upper socio-economic class.											
32. Considers fashion and dress important.											
33. Is easily influenced by peers.											

Section II: Please indicate the probability that each of these statements accurately describes a typical secondary career and technical education teacher.

	0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
34. Possesses a bachelor's degree.											
35. Has formal training in pedagogy (instruction).											
36. Has lots of on-the-job experience.											
37. Is more of a practitioner than a theorist.											
38. Is not involved in the school's extracurricular activities.											
39. Is interested in the social aspects of school.											
40. Exemplifies what his or her school stands for.											
41. Is good with concrete concepts.											
42. Is a leader in the school.											
43. Possesses a master's degree.											

44. Would be perceived as having a lower status by other teachers.												
45. Is above average in intelligence.												

Section 3: Please indicate the probability that each of these statements accurately describes a typical secondary career and technical education program.

	0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
46. All students can benefit from it.											
47. Is better suited for students who work well with their hands.											
48. Is for students who have above average intelligence.											
49. Is for students who do not perform well in the basic skill areas.											
50. Is expensive to maintain.											
51. Its enrollment is typically students with a blue-collar or agriculture background.											
52. Is for students who plan to enter high skill/ high wage occupations.											
53. Is isolated from the rest of the school.											
54. Provides for the education of the whole person.											
55. Is for college bound students.											
56. Is outdated.											
57. Has a strong association with Virginia's SOL.											
58. Is remedial in nature.											
59. Focuses on occupations that aren't in demand.											
60. Does a good job of preparing people for meaningful employment.											
61. Provides a seamless transition to employment.											
62. Is a good return on investment.											

Appendix D
VDOE Cover Letter

Eric Lichtenberger
120 War Memorial Hall (0313)
Department of Teaching and Learning
Virginia Tech
Blacksburg, VA 24061

February 28, 2004

Dear Participant:

Please take the time to complete the attached survey instrument. The information you provide will be used in a study for the purpose of measuring perceptions of secondary career and technical education programs, students, and teachers. The information will remain completely confidential. Once you return the completed questionnaire in the enclosed envelope and sign the informed consent form below, your name will be replaced with a numerical code to ensure your anonymity. The only person with access to your data and the code will be the principal researcher. If you have any questions regarding this survey, please call Eric Lichtenberger at (540) 230-4892 or e-mail him at elichten@vt.edu. All participants who return the survey will receive one chance at winning a prize. On April 4th, one \$50 gift certificate to Barnes and Noble will be raffled off to eligible participants.

Cordially,

Eric Lichtenberger
Principal Researcher

I understand that the information I provide will be used in a Ph.D. study and that completing the survey is entirely voluntary. Furthermore, I have been informed of the measures to keep the information confidential and to ensure my anonymity. Also, in order to be eligible for the \$50 gift certificate to Barnes and Noble, I must return the questionnaire to the researcher prior to April 4th.

Signed Name: _____ Date: _____

Printed Name: _____

Appendix E
CTE Cover Letter

Eric Lichtenberger
120 War Memorial Hall (0313)
Department of Teaching and Learning
Virginia Tech
Blacksburg, VA 24061

February 28, 2004

Dear Participant:

Please take the time to complete the attached survey instrument. The information you provide will be used in a study for the purpose of measuring the perceptions local career and technical education administrators have of the stereotypes of secondary CTE programs, students, and teachers. The information will remain completely confidential. Once you return the completed questionnaire in the enclosed envelope and sign the informed consent form below, your name will be replaced with a numerical code to ensure your anonymity. The only person with access to your data and the code will be the principal researcher. If you have any questions regarding this survey, please call Eric Lichtenberger at (540) 230-4892 or e-mail him at elichten@vt.edu. All participants who return the survey will receive one chance at winning a prize. On April 4th, one \$50 gift certificate to Barnes and Noble will be raffled off to eligible participants.

Cordially,

Eric Lichtenberger
Principal Researcher

I understand that the information I provide will be used in a Ph.D. study and that completing the survey is entirely voluntary. Furthermore, I have been informed of the measures to keep the information confidential and to ensure my anonymity. Also, in order to be eligible for the \$50 gift certificate to Barnes and Noble, I must return the questionnaire to the researcher prior to April 4th.

Signed Name: _____ Date: _____

Printed Name: _____

Appendix F

Ingroup Non-respondent Follow-up Results

T-scores and the Level of Significance Between Ingroup Respondents and Non-respondents

Item	Statement	<i>t</i>	Significance
S3	Displays above average intelligence in class.	-.085	.932
S8	Has difficulty with abstract concepts.	-1.245	.216
S10	Plans to go to college.	.254	.800
S17	Enjoys non-academic classes more than academic ones.	.033	.974
S31	Is from middle to upper socio-economic class.	.295	.769
T6	Is interested in the social aspects of the School.	.361	.719
P2	Is better suited for students who work well with their hands.	-.657	.513
P8	Is isolated from the rest of the school.	-.361	.719
P12	Has a strong association with Virginia's Standards of Learning.	-.400	.968

Note. Ingroup: respondents (n=70) and non-respondents (n=17). Alpha level = .05.

Appendix G
Outgroup Non-respondent Follow-up Results

T-scores and the Level of Significance Between Outgroup Respondents and Non-respondents

Item	Statement	<i>t</i>	Significance
S3	Displays above average intelligence in class.	.373	.710
S8	Has difficulty with abstract concepts.	-.1.553	.124
S10	Plans to go to college.	-.899	.371
S17	Enjoys non-academic classes more than academic ones.	-.826	.411
S31	Is from middle to upper socio-economic class.	.218	.828
T6	Is interested in the social aspects of the School.	-.431	.667
P2	Is better suited for students who work well with their hands.	-1.637	.106
P8	Is isolated from the rest of the school.	-.940	.350
P12	Has a strong association with Virginia's Standards of Learning.	-.473	.637

Note: Outgroup: respondents (N=61) and non-respondents (N=20). Alpha= .05.

Vita

Eric J. Lichtenberger

Current Address

130 Hunters Ridge Lane
Christiansburg, VA 24061
(540) 230-4892
elichten@vt.edu

Office Address

120 War Memorial Hall
Blacksburg, VA 24061
(540) 230-6480

EDUCATION:

Doctor of Philosophy, Career and Technical Education,

May 2004: Virginia Tech, Blacksburg, VA

Advisor: Kurt Eschenmann

Dissertation: The accuracy of meta-stereotypes applied to career and technical education.

Master of Education, Workforce Education and Development,

May 2001: Southern Illinois University, Carbondale, Illinois

Advisor: Keith Waugh

Research Paper: Faculty members' attitudes towards students diagnosed with learning disabilities and academic support services.

Bachelor of Arts, Political Science, December 1998

Southern Illinois University, Carbondale, Illinois

HONORS/AFFILIATIONS

Omicron Tau Theta, Iota Chapter President, 2003-2004

Rufus M. Beamer Professional Development Award Winner, 2001, 2004

American Society for Training and Development, 2001 – present

Association for Career and Technical Education, 2001 – present

American Vocational Education Research Association, 2002- present

Graduate Representative for School of Education Governance Board

RESEARCH INTERESTS

- Policy analysis
- School to work transitions and linkages
- Program evaluation and needs assessment

TEACHING EXPERIENCE

Instructor, Adult Basic Education, New River Community College, Dublin, VA:

January 2003- June 2003

- Coordinated course objectives with the needs of corporate sponsors
- Developed a curriculum based on the United Auto Workers Apprenticeship Training Program
- Successfully lectured to over 70 adult learners on a weekly basis
- Developed assessments to measure skill in verbal reasoning, numerical ability, spatial relations, and mechanical reasoning
- Administered tests to over 100 adult learners

Graduate Assistant, Career and Technical Education Program, Virginia Tech, Blacksburg, VA:
August 2001 – May 2004

- Taught graduate/senior level course involving the integration of technology in the classroom
- Taught junior level courses in small business operations, management, and human relations
- Taught introductory level course on the foundations of career and technical education, which focused on various federal, state, and local educational mandates
- Developed syllabi, assignments, and assessments for each of the aforementioned courses
- Supervised student teachers

ADMINISTRATIVE EXPERIENCE

Diagnostic/ Case Supervisor, Clinical Center Achieve Program, Southern Illinois University,
Carbondale, IL: December 1999– August 2001

- Developed numerous training programs for the administration and interpretation of psychometric tests
- Assisted in the development of faculty seminars on compliance with the Individuals with Disabilities Education Act and the Americans with Disabilities Act
- Arranged the delivery of several presentations about college students with learning disabilities and the support services they receive
- Coordinated and delivered a time-management seminar to over 190 student athletes.
- Advised and mentored students with learning disabilities
- Administered various tests of intelligence and performance to students suspected of having learning disabilities
- Created a teacher's training manual for a master's level class
- Supervised the diagnostic training of over 12 graduate assistants
- Represented the Clinical Center Achieve Program at numerous open-houses in the Midwest

Note-taking Supervisor, Clinical Center Achieve Program, Southern Illinois University,
Carbondale, IL: June 1999-December 1999

- Screened and interviewed over 200 applicants for the position of note taker
- Supervised and coordinated the work efforts of 160 note takers
- Communicated with various department heads and professors
- Created and maintained a note-taker database
- Coordinated in-house training program for hired note-takers
- Validated pay-roll and time cards

Intern, Job Placement Office, New River Community College,
Dublin, VA: May 2002- August 2002

- Researched and evaluated various web-based job posting sites
- Created and delivered a test-taking skills training seminar
- Administered Work Keys examinations to over 120 individuals
- Supervised NRCC job fair for Nursing Program
- Assessed student satisfaction regarding Nursing job fair
- Collaborated with partner institutions of higher education to coordinate a regional job fair in Roanoke, VA

Graduate Assistant, Career and Technical Education Program, Virginia Tech, Blacksburg, VA:
August 2001 – May 2004

- Represented CTE program at various open houses and college fairs
- Developed recruitment plans for both undergraduate and graduate programs
- Prepared accreditation report and supporting documents for Vocational-Industrial Education and Health and Medical Science Education programs according to NCATE standards
- Created and maintained interactive website for CTE program

RESEARCH EXPERIENCE

Research Assistant, Center for Assessment, Evaluation, and Educational Programming, Virginia Tech, Blacksburg, VA: May 2003-August 2003.

- Researched and established contacts with numerous extramural funding agents
- Assisted in the development of an interactive website for the purpose of assessing client needs
- Marketed data collection processes to numerous institutions of higher education and to various accreditation boards
- Developed a data collection site for Virginia's Office of Education for Independence

GRANTWRITING EXPERIENCE

Federal Ticket to Work Program

- Coordinated meetings with various stakeholders at New River Community College
- Established a network with individuals working for the Social Security Administration, Virginia Department of Rehabilitative Services, and other post-secondary institutions involved in the grant program
- Prepared request for proposal and gathered supporting documents and information

University Council for Workforce and Human Research Education Research Grant

- Contacted a sample of administrators working for the Virginia Department of Education
- Contacted a sample of local career and technical administrators working throughout the Commonwealth of Virginia
- Established the stereotypes of CTE
- Established the meta-stereotypes of local CTE administrators
- Prepared request for proposal

PRESENTATIONS

- Lichtenberger, E., & Price, W. (2003, December). Developing a Comprehensive Recruiting Plan for Career and Technical Education. Paper presented at the annual meeting of the Association for Career and Technical Education: Orlando, FL.
- Lichtenberger, E. (in preparation). The Accuracy of Meta-Stereotypes Applied to Career and Technical Education. Paper in preparation for the annual meeting of the Association for Career and Technical Education: Las Vegas, NV.