Nonverbal Communication and Its Role in Building Rapport: A Mixed Methods Study of K-12 Teachers

Barbara M. Moody
University of Maine, barbara.m.moody@maine.edu

Follow this and additional works at: https://digitalcommons.library.umaine.edu/etd

Recommended Citation

This Open-Access Thesis is brought to you for free and open access by DigitalCommons@UMaine. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of DigitalCommons@UMaine. For more information, please contact um.librarytechnical.services@maine.edu.
NONVERBAL COMMUNICATION AND ITS ROLE IN BUILDING RAPPORT:
A MIXED METHODS STUDY OF K-12 TEACHERS

By
Barbara M. Moody
B.S. St. Michael’s College, 1978
M.Ed. University of Alaska, 1984

A DISSERTATION
Submitted in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Philosophy
(in Educational Leadership)

The Graduate School
The University of Maine
December, 2019

Advisory Committee:
Ian Mette, Associate Professor of Educational Leadership, University of Maine, Advisor
Catherine Biddle, Assistant Professor of Educational Leadership, University of Maine
Kendall Zoller, Associate Professor, California State University, Dominguez Hills
Dr. Richard Ackerman, Professor of Educational Leadership, University of Maine
Dr. Paul D. Knowles, Lecturer of Educational Leadership, University of Maine
NONVERBAL COMMUNICATION AND ITS ROLE IN BUILDING RAPPORT: 
A MIXED METHODS STUDY OF K-12 TEACHERS

By Barbara M. Moody

Dissertation Advisor: Dr. Ian Mette

An Abstract of the Dissertation Presented
In Partial Fulfillment of the Requirements for the
Degree of Doctor of Philosophy
(in Educational Leadership)
December, 2019

This study set out to measure the impact of nonverbal communication (NVC) teacher behaviors on student perceptions of rapport and to determine which of these behaviors were conscious. Six teachers at three grade levels were participants in the study. The NV behaviors of teachers were quantified and their effect on student perceptions of rapport was measured by student surveys. Teachers’ awareness of their NVC skills was established through an analysis of interviews. The mixed-methods convergent parallel methodology contributed to a rich collection of data that was analyzed using multiple strategies. The literature provides extensive evidence that NVC behaviors contribute to student perceptions of rapport. Evidence is particularly robust at the college level (Andersen, 1980; Finn et al., 2009; McCroskey et al., 1995). This study resulted in multiple findings. The teachers in this study shared a wide variety of NV behaviors that contributed to rapport, although with varying levels of awareness. The level of awareness did not have an impact on student perceptions of rapport, consistent with Pentland and Heibeck’s (2010) study. Finally, although the study makes a contribution to future research, teachers’ NV behaviors did not yield significant results when correlated with perceptions of rapport.
ACKNOWLEDGMENTS

My gratitude goes to my Dissertation Committee members, Dr. Ian Metta, Dr. Catharine Biddle, and Dr. Kendall Zoller, Dr. Richard Ackerman, Professor of Educational Leadership, University of Maine and Dr. Paul D. Knowles, Lecturer of Educational Leadership, University of Maine for their thoughtful and insightful feedback. They demonstrated the quality that has been evident to me since I began my doctoral studies in the Educational Leadership program at the University of Maine. The rigor, academic excellence, and personal care inherent in this program made it an intellectually challenging and personally enriching experience.

The patience and attention to providing respectfully guidance and challenging me in my writing and thinking were exceptional. I want to especially thank Dr. Zoller, without whose expertise and experience I would not have been able to pursue this topic. He has been an inspiration to me and I am grateful for his willingness to be on my committee.

I also wish to acknowledge my cohort members, Dr. Kathy Harris-Smedberg, Quinton Donahue, Theresa Gillis, Pamela Doyen, and Katie Thompson for their ongoing support and encouragement. We have journeyed together these many years, and will remain together until we all reach our goal. Finally, I cannot conclude without acknowledging my husband, Dr. Stan Moody, for his constant encouragement, patience, and love throughout. This achievement and all others in my life have only been realized with his support and unconditional respect.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xiii</td>
</tr>
<tr>
<td>CHAPTER ONE: INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Problem Statement</td>
<td>2</td>
</tr>
<tr>
<td>Purpose</td>
<td>3</td>
</tr>
<tr>
<td>Positionality Statement</td>
<td>4</td>
</tr>
<tr>
<td>Overview</td>
<td>5</td>
</tr>
<tr>
<td>CHAPTER TWO: REVIEW OF THE LITERATURE</td>
<td>8</td>
</tr>
<tr>
<td>Historical and Theoretical Foundations of NVC</td>
<td>8</td>
</tr>
<tr>
<td>Impact of Nonverbal Communication</td>
<td>11</td>
</tr>
<tr>
<td>Nonverbal Communication</td>
<td>12</td>
</tr>
<tr>
<td>Affective Learning</td>
<td>14</td>
</tr>
<tr>
<td>Cognitive Learning</td>
<td>15</td>
</tr>
<tr>
<td>Connections to Affective Concepts</td>
<td>17</td>
</tr>
<tr>
<td>Nonverbal Communication and Caring</td>
<td>19</td>
</tr>
<tr>
<td>Nonverbal Communication and Relatedness</td>
<td>23</td>
</tr>
<tr>
<td>Nonverbal Communication and Rapport</td>
<td>27</td>
</tr>
<tr>
<td>Nonverbal Communication and Engagement</td>
<td>28</td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Neuroscience, Physiology, and Nonverbal Communication</td>
<td>30</td>
</tr>
<tr>
<td>Summary of Review of the Literature</td>
<td>32</td>
</tr>
<tr>
<td>Conceptual Framework</td>
<td>32</td>
</tr>
<tr>
<td>CHAPTER THREE: METHODOLOGY</td>
<td>36</td>
</tr>
<tr>
<td>Research Goals and Questions</td>
<td>37</td>
</tr>
<tr>
<td>Operational Definitions</td>
<td>38</td>
</tr>
<tr>
<td>Design</td>
<td>39</td>
</tr>
<tr>
<td>Population and Sample</td>
<td>43</td>
</tr>
<tr>
<td>Data Collection</td>
<td>44</td>
</tr>
<tr>
<td>Instruments</td>
<td>45</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>47</td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>53</td>
</tr>
<tr>
<td>Validity and Reliability</td>
<td>54</td>
</tr>
<tr>
<td>Validity</td>
<td>54</td>
</tr>
<tr>
<td>Reliability</td>
<td>56</td>
</tr>
<tr>
<td>CHAPTER FOUR: FINDINGS</td>
<td>58</td>
</tr>
<tr>
<td>Correlation of Teachers’ Nonverbal Behaviors with Student Rapport</td>
<td>60</td>
</tr>
<tr>
<td>Relationship between Rapport Behaviors and Rapport Survey Scores</td>
<td>62</td>
</tr>
<tr>
<td>Relationship between Credibility Behaviors and Rapport Survey</td>
<td></td>
</tr>
</tbody>
</table>
Predicting Whole Survey Scores Based on Total Nonverbal Behaviors

Analysis of Rapport by Grade Level Groupings

Predicting Survey Rapport Scores from Rapport Behaviors by Grade Level

Predicting Survey Rapport Scores from Credibility Behaviors by Grade Level

Predicting Survey Rapport Scores from Total Behaviors by Grade Level

Predicting Whole Survey Scores from Rapport Behaviors by Grade Level

Predicting Whole Survey Scores from Credibility Behaviors by Grade Level

Predicting Whole Survey Scores from Total Behaviors by Grade Level

Teachers’ Values: Respect, Communication, Connection, and Relationships

Respect
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>82</td>
</tr>
<tr>
<td>Connection</td>
<td>86</td>
</tr>
<tr>
<td>Relationships</td>
<td>88</td>
</tr>
<tr>
<td>Trust</td>
<td>91</td>
</tr>
<tr>
<td>Awareness of Nonverbal Skills</td>
<td>93</td>
</tr>
<tr>
<td>Communication</td>
<td>96</td>
</tr>
<tr>
<td>Classroom Management</td>
<td>98</td>
</tr>
<tr>
<td>Motivation</td>
<td>99</td>
</tr>
<tr>
<td>Correlation of Nonverbal Communication Skills with Field-Based</td>
<td>100</td>
</tr>
<tr>
<td>Researcher’s Rankings and Awareness Rankings</td>
<td></td>
</tr>
<tr>
<td>Conscious and Subconscious Nonverbal Behavior</td>
<td>103</td>
</tr>
<tr>
<td>Participants’ Results</td>
<td>104</td>
</tr>
<tr>
<td>Similarities and Differences Among Participants</td>
<td>110</td>
</tr>
<tr>
<td>Summary of Findings</td>
<td>111</td>
</tr>
</tbody>
</table>

**CHAPTER FIVE: DISCUSSION AND IMPLICATIONS**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synopsis of the Context and the Problem</td>
<td>114</td>
</tr>
<tr>
<td>Synopsis of the Methodology</td>
<td>116</td>
</tr>
<tr>
<td>Strengths, Limitations, and Trustworthiness</td>
<td>118</td>
</tr>
<tr>
<td>Summary of Major Results</td>
<td>119</td>
</tr>
<tr>
<td>Discussion</td>
<td>124</td>
</tr>
</tbody>
</table>
This Study Does Not Support the Evidence in the Literature that NVC Skills Contribute to Rapport in the Classroom 126

K-12 Teachers Engage in a Broad Spectrum of NV Behaviors that Promote Rapport 127

No Significant Relationship was Established between Nonverbal Rapport Behaviors and Students’ Perception of Rapport 128

Researcher’s Field-Based Rankings were a Significant Predictor of Student Perceptions of Rapport in this Study 130

Rapport is Important to Teachers 131

Teachers are Aware of Only a Fraction of the NV Communication Skills They Use 132

Teachers’ Awareness of Their NVC Skills Is Not Correlated with Observed NV Behaviors or Student Perceptions of Rapport 133

Implications 134

Implications for Teachers 134

Implications for School Administrators 137

Implications for Educator Preparation Programs 138

Implications for Researchers 141

Conclusion 144

REFERENCES 147

APPENDICES 157
Appendix A. Informed Consent - Teacher............................................. 157
Appendix B. Interview Protocols...................................................... 159
Appendix C. Informed Consent - District............................................ 163
Appendix D. Observation Table Containing the 22 Nonverbal Patterns..... 165
Appendix E. Surveys........................................................................ 167
  High School Survey....................................................................... 167
  Middle School Survey................................................................. 169
  Grade 3 - 5 Survey....................................................................... 170
BIOGRAPHY OF THE AUTHOR..................................................... 171
LIST OF TABLES

Table 3.1 Cronbach Alpha for rapport survey .................................................. 47
Table 3.2 Initial provisional codes ................................................................. 49
Table 3.3 Foundational studies supporting Zoller’s coding structure ............... 50
Table 4.1 Organization of statistical analyses ............................................... 60
Table 4.2 Table of means .............................................................................. 62
Table 4.3 Pearson Correlation Coefficients for aggregated data ................. 65
Table 4.4 ANOVA: Variance of rapport scores attributed to rapport behaviors .... 66
Table 4.5 ANOVA: Variance of rapport scores attributed to credibility behaviors ... 67
Table 4.6 ANOVA: Variance of rapport scores attributed to total behaviors ........ 68
Table 4.7 ANOVA: Variance of whole survey scores attributed to rapport behaviors ................................................................. 69
Table 4.8 ANOVA: Variance of whole survey scores attributed to credibility behaviors ................................................................. 69
Table 4.9 ANOVA: Variance of whole survey scores attributed to total behaviors ................................................................. 70
Table 4.10 Summary of R Square results of linear regression analyses ........... 71
Table 4.11 ANOVA: Variance of rapport scores attributed to rapport behaviors by grade ................................................................. 72
Table 4.12 ANOVA: Variance of rapport scores attributed to credibility behaviors by grade level ................................................................. 73
Table 4.13  ANOVA: Variance of rapport scores attributed to total behaviors by grade level ................................................................. 74

Table 4.14  ANOVA: Variance of whole survey scores attributed to rapport behaviors by grade ................................................................. 75

Table 4.15  Variance of whole survey scores attributed to credibility behaviors by grade level ................................................................. 76

Table 4.16  Variance of whole survey scores attributed to total nonverbal behaviors by grade level ................................................................. 77

Table 4.17  Comparison of aggregate and grade level analyses ....................... 78

Table 4.18  NVC skills identified by participants ..................................................... 94

Table 4.19  Participant references to nonverbal skills ........................................... 95

Table 4.20  Consolidated quantitative and qualitative data .................................... 100

Table 4.21  Combined data correlations ................................................................. 102

Table 5.1  Implications of Findings ...................................................................... 135
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 2.1</td>
<td>Conceptual Framework</td>
<td>34</td>
</tr>
<tr>
<td>Figure 3.1</td>
<td>Convergent Parallel Mixed Methods Research Design</td>
<td>42</td>
</tr>
<tr>
<td>Figure 3.2</td>
<td>Initial Provisional Codes</td>
<td>48</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>Findings Organized by Research Design</td>
<td>59</td>
</tr>
<tr>
<td>Figure 5.1</td>
<td>Conceptual Framework as Delineated in Chapter Two</td>
<td>125</td>
</tr>
<tr>
<td>Figure 5.2</td>
<td>Observation Rubric for NV Behaviors that Promote Rapport</td>
<td>131</td>
</tr>
</tbody>
</table>
CHAPTER ONE

INTRODUCTION

Communication is a powerful force in education that promotes an emotional connection between teachers and students and has a substantial influence on the affective and cognitive learning of students (Teven & Hanson, 2004). Although a broad spectrum of communication skills is essential, one of the keys to successfully teaching is the nonverbal communication (NVC) of teachers (Alvarez & Fuentes, 1994; Battey, 2013; Johnson & Miller, 2002; McCroskey, Teven, Minielli, & Richmond-McCroskey, 2014; Quay & Blaney, 1990). As demonstrated by seminal work in this area, NVC serves to minimize the psychological distance between teacher and students and comprises a significant percentage of communication when conveying feelings or attitudes (Mehrabian, 1971). Lappakko (1997) called into question the specificity of Mehrabian’s studies in terms of percentages, but agreed that NVC makes a significant contribution to communicating feelings and attitudes. Furthermore, when verbal and nonverbal messages conflict, students tend to give nonverbal messages more credibility (White, 2016). Battey (2013) emphasized the importance of including relational aspect in classrooms. NVC skills of teachers are a significant element building rapport between teacher and student (Tickle-Degnen & Rosenthal, 1990; Nelson, Grahe, & Ramseyer, 2016). Relatedness, defined as feeling significantly emotionally connected to others, is a contributing factor to motivation (Ryan

"Nonverbal communication forms a social language that is in many ways richer and more fundamental than our words." -- Leonard Mlodinow
& Deci, 2000). Communication is a primary contributor to affective and cognitive outcomes for students. The integration of the interpersonal relationships created and supported through NVC and teaching can contribute to the effectiveness of teaching (White, 2016).

In summary, communication is a fundamental influence on educators’ relationships with students (Kuck, 2000; Peterson & Deal, 1998; Riehl, 2000; Skow & Whitaker, 1996). This study will focus on teachers’ NVC skills, evidence of rapport in the classroom, the conscious use of NVC skills, and teachers’ perceptions of the effects of those skills on the affective outcomes of students.

**Problem Statement**

A predominant skill of teachers and school leaders that has a significant direct effect on affective student outcomes and an indirect effect on cognitive outcomes is the ability of teachers and school leaders to connect emotionally with students (Pogue & Ahyun, 2006). This connection, or rapport, is created through verbal and nonverbal communication (Nowak-Fabrykowski, 2012; Singh, 2013; Teven, 2001; Zoller, 2010). NVC is comprised of behaviors including gestures, movement around the room, eye contact, proximity, touch, smiles, nodding, silence, and open body position, voice fluctuation, pausing, breathing patterns, and arranging the room for interaction (Epner & Baile, 2011; Nussbaum, 1992; Zoller, 2007). The effects of NVC result from the interpretation by the listener. Factors such as socioeconomic status and cultural background can affect students’ interpretation of the teacher’s NVC and contribute to a sense of emotional closeness (Johnson & Miller, 2002; Roorda, Koomen, Spilt, & Oort, 2011). This sense of personal connectedness and its importance in an educational setting has been extensively studied for over forty years (Finn et al., 2009; Witt, Wheeless, & Allen, 2004).
The problem addressed by this study is that the connection between teachers’ NVC skills and rapport in the K-12 classroom has been investigated but is not as well-established as the connection between NVC skills and rapport in the college classroom (Nelson, Grahe, & Ramseyer, 2016; Rogers, 2015; Tickle-Degnen & Rosenthal, 1990; Zoller, 2010). Additionally, it is unclear whether teachers are aware of the NVC skills that contribute to rapport and whether consciousness of these skills is necessary. Pentland and Heibeck (2010) state that many people have expertise in using NVC to influence others and to influence success and decision-making, but most are doing it subconsciously. If students’ perceptions of the nonverbal skills of their teachers and the contribution of these skills to rapport are significant, an increased awareness and knowledge of these skills would further the efficacy of teachers in their effort to impact student outcomes. School leaders would benefit from this knowledge as they guide teachers toward improvement.

Neill and Caswell (1993) maintained that many nonverbal behaviors of teachers were subconscious, especially those of experienced teachers, perhaps because of automaticity. Much of our everyday NVC is at a level of automaticity, operating below our level of awareness (Burgoon, Guerrero, & Manusov, 2011). White and Gardner (2013) agreed that teachers are mostly unaware of NVC that affects the quality of their relationships with students, such as dress, gestures, facial cues, and other body language. Zoller (2015) maintained that a deliberate attempt to use NVC skills builds rapport, particularly in intercultural settings. Teachers can capitalize on NVC skills they have and increase their repertoire through increased awareness.

**Purpose**

The purpose of this study is to examine whether the degree of awareness of NVC of teachers differs from an objective measure of their NVC skills and if these skills contribute to
rapport in the classroom. NVC is not dependent upon awareness. Its powerful effects are realized whether individuals are conscious of their nonverbal behaviors or not (White, 2016). In order to demonstrate Communicative Intelligence (CI), Zoller (2015) maintained that NVC must be deliberate and conscious. This consciousness will promote greater communicative flexibility and authenticity and increase rapport. By examining these topics, this study seeks to better understand the role of NVC in increasing rapport between teacher and students at the K-12 level. To summarize, this study examines the research on the effects of teachers’ NVC on students using studies in the fields of communication, psychology, anthropology, neuropsychology, and education. Informed by the research, the study expands this field of research by extending it to K-12 classrooms and examining teachers’ consciousness of their competence with NVC skills.

**Positionality Statement**

With all qualitative research, the researcher must reflect upon the influences of experience, culture, and inherent bias. This research reflects an ontological and epistemological framework of critical realism. Critical realism combines ontological realism (there is an objective reality) with epistemological constructivism (reality is created through the interaction of previous and novel experiences) (Creswell, 2013; Maxwell, 2013). This philosophy is operationalized in a pragmatic interpretive paradigm (Creswell, 2013; Gay et al., 2011). This framework was appropriate for this study because qualitative approaches reflect the participants’ perceptions and values and quantitative approaches inform those perceptions and values.

Personal philosophy influences research in that it is the lens through which the researcher engages with participants, determines what is important data to collect, and interprets those data. Throughout the research process, the practice of reflexivity contributes to the trustworthiness of the work. Reflexivity is a practice that brings self-awareness and reflection at each stage of
qualitative research to manage one’s subjective interpretations (Roulston & Shelton, 2015).

Elliott, Ryan, and Hollway (2011) stress the importance of understanding that reflexivity supports the awareness that all research has a subjective component that renders the results open to interpretation and change and helps the researcher grapple with results that may not fit into one’s previous schemas. (Elliott, Ryan, & Hollway, 2012)

As a researcher, I continually reflected on my worldview and my experiences. In reflecting on the inevitable effect of these factors, I made every effort to consider alternative viewpoints and to accept results that did not fit into my understandings and perceptions. The result is not a work without bias, but is a work with an awareness of bias and an acceptance that this work can be legitimately challenged.

**Overview**

Chapter Two will provide a comprehensive, multi-disciplinary review of the literature relevant to this study. Literature in the fields of communication, psychology, education, neuropsychology, linguistics, and anthropology all contribute to knowledge of the topic of NVC. Both theoretical and empirical studies are included, with an emphasis of the literature review focusing on the empirical. The literature is organized thematically to present a cogent and logical synthesis. An examination of the historical and theoretical foundations of NVC research precedes a discussion on the affective and cognitive impact of NVC. Following this, connections to other affective concepts including caring, relatedness, rapport, and engagement, are reviewed, supporting the importance of NVC in teacher-student relationships. Finally, the literature on communication and neuroscience is examined. The conceptual framework provides the structure, supported by the literature, upon which the study is built. The chapter concludes with
a summary of current knowledge gleaned from the literature and any identified gaps in that knowledge.

Chapter Three describes the methodology of the study. The problems identified by the researcher are the lack of research on K–12 teachers’ use and awareness of NVC skills. The research questions address teachers’ NVC behaviors and their awareness of them, and how these behaviors correlate with their awareness and with student perceptions of rapport. This study is a mixed methods convergent parallel design involving multiple interviews, a student survey, and videotaped lessons. This design was chosen as the most appropriate way to address the research questions (Maxwell, 2013; Creswell & Plano-Clark, 2011).

A mixed methods approach also capitalizes on the strengths of both qualitative and quantitative methods. In this study qualitative methods reflect the participant’s values and perceptions, while quantitative methods inform those perceptions and values. A mixed methods approach contributes the most relevant and authentic data to contribute to the research in the field of NVC (Creswell & Plano-Clark, 2011; Maxwell, 2013; Worley et al., 2007; Vogt, Gardner, & Haeffele, 2012).

In the methods chapter, research questions are stated and key terms are defined. Sampling strategies are described and justified. Participants included six teachers from a large district in Maine. Two teachers from each of three grade level spans volunteered to participate. A description of the data collection from videotaped lessons of each teacher, interviews with each teacher, and student survey data indicating students’ perceptions of rapport is included.

Chapter 3 outlines methods for transcribing and coding interviews using qualitative software. A description of the process for coding videotaped lessons using qualitative and quantitative methods follows. Zoller’s (2007) Observation Table of Nonverbal Patterns is
introduced as the instrument used to code NVC behaviors. A description of the researcher’s plans to observe the classroom during each videotaping segment and record qualitative notes regarding grade level, context of the lesson, and pre-analytic rankings of each participant’s skillfulness in building rapport is detailed. This is followed by the plan for subjecting data from the survey of students (N=119) to descriptive and inferential statistical analysis. Finally, researcher bias, trustworthiness, validity, and reliability are addressed.

Chapter Four describes the findings of this study. First, quantitative analyses are depicted. Both descriptive and inferential statistical results are summarized, first in the aggregate, and then by grade level groupings. This is followed by qualitative analyses. Participants’ comments are arranged thematically and evidence of their awareness of NVC is examined. Next, correlations are discussed between quantitative and qualitative factors. Finally, each participant’s results are discussed.

Finally, Chapter Five concludes the study. It begins with a review of the purpose of the study, followed by a review of the methodology. This is followed by a synopsis of the context and the problem. Strengths, limitations, and trustworthiness are addressed next, followed by a summary of the results. A discussion section outlines the major findings. Finally implications for teachers, administrators, educator preparation programs, and researchers are discussed, concluding with recommended areas of research.
CHAPTER TWO

REVIEW OF THE LITERATURE

The purpose of the literature review in this study is to provide the foundation for the conceptual framework and connect it to salient research in the field (Gay, Mills, & Airasian, 2011). First, the historical and theoretical foundations of NVC are examined. Next, selected studies are presented addressing the effect of NVC skills on affective outcomes and, indirectly, on student cognitive outcomes. Then, a discussion illustrating the breadth of concepts related to communication and a cluster of terms that describe the emotional connection between teacher and student and the relationship of this connection to student outcomes is presented. Next, evidence from neuropsychology that highlights the importance of NVC concludes the literature review. Finally, a conceptual framework describes the phenomenon of NVC and its application to this study.

The identification of NVC skills that support interpersonal relationships, and secondarily cognitive outcomes, is a focus of the literature review segment of this study. Research on communication can be applied to any human interaction, but the review determines if there is evidence to indicate that teachers’ NVC generates social-emotional and cognitive student outcomes. Current knowledge of specific nonverbal skills that contribute to interpersonal relationships is considered. Connecting NVC to related terms in education and psychology such as caring, student engagement, rapport, and relatedness connects research on communication to research in other fields such as education and psychology.

**Historical and Theoretical Foundation of NVC**

A closer look at the development of knowledge about NVC skills, before considering the effect of these skills on student affective and academic outcomes will provide context.
Beginning with Quintillian and developing strongly in the 20th century, non-verbal communication has been identified as a major factor in learning and communication for more than 2,000 years. Quintilian, a Roman rhetorician who lived from 35B.C to 100 A.D., addressed the importance on non-verbal communication in his AD 95 work, *Institutes of Oratory* (Quintilianus, trans. 1922). In this work, Quintilllian devoted a chapter to gestures and their importance in effective communication. The first definitive study of non-verbal communication was by Charles Darwin. In *The Expression of the Emotions in Man and Animals* he outlined the key role of gesture in communication. In this publication, Darwin discussed the innate nature of gesture in communication, but also remarked that other gestures appear to be learned, much in the same way as we learn language. He purported that gestures are essential to communication.

The movements of expression in the face and body, whatever their origin may have been, are in themselves of much importance for our welfare. The movements of expression give vividness and energy to our spoken words. They reveal the thoughts and intentions of others more truly than do words, which may be falsified (Darwin, 1872, p. 151).

Although these references to NVC provide an historical backdrop, it wasn’t until the mid to late twentieth century that NVC became a subject of theory and treatment of it in the literature began to flourish.

The scientific examination of non-verbal communication accelerated in the mid twentieth century. Much of the earliest work was done in the kinesthetic arena (Argyle, 1975; Birdwhistell, 1970). A number of theorists began to investigate the role of NVC (Argyle, 1975; Birdwhistell, 1970; Hall, 1959; Leach, 1972). These early theorists focused on creating theoretical constructs of NVC and defining its relationship to verbal language. Hall (1959) developed the theory of a triad of level of culture: formal, informal, and technical. These levels
interact to produce a cultural context. In the area of interaction, language is considered technical, and gesture informal. He included pitches and stresses in the voice as factors of language that impact meaning (Hall, 1959). Leach (1972) suggested that focusing our attention on physical gestures may lead us to conclude that there are inherent structural components of gesture similar to and sometimes parallel to the structural components of language. Thus, we can study gestures as communication elements and determine their effects. Other early researchers objected to studying NVC as a separate language, seeing NVC as a para-language inextricably linked to verbal language. The interaction of verbal and NVC was essential to understanding the dynamics of both (Argyle, 1975; Birdwhistell, 1970).

The work of Birdwhistell began to establish a science of NVC. His kinesic theory of communication posited, “like other aspects of human behavior, body posture, movement, and facial expression are patterned, and, thus, subject to systematic analysis” (Birdwhistell, 1970, p. 183). Not only did Birdwhistell isolate numerous gestures and vocal characteristics, he also provided extensive guidance on how to collect data on kinesics from interviews, real life observations, and observations of film. As a result, other researchers began to codify nonverbal language (Argyle, 1975). Bull (2012) confirmed the study of body language through microanalysis demonstrated the belief that gestures have a social significance in communication.

In the mid-1970’s, Argyle provided an in-depth study of a variety of different bodily signals. He connected specific facial features with perceptions of personality traits. The effects of eye gaze were correlated with persuasive and engaging characteristics of a speaker. Gestures were studied in the context of speech and found to support verbal communication. Postures serve to convey both attitude and emotion.
We have seen that non-verbal signals for interpersonal attitudes are far more powerful than initially similar verbal ones. Verbal signals can lead to immediate action, as when the commands are given to well-trained men, but usually the impact of words is weaker and less direct than the impact of non-verbal signals. (Argyle, 1975, p. 362)

In addition to studies of gesture, research in the auditory area of NVC explored the nuances of voice and their effect on communication. Birdwhistell (1970) called linguistics and kinesics “infra-communicational” (p. 127) systems because it is only in their interaction that the totality of communication structures can be understood. Zoller (2010) outlined the auditory patterns that affect perceptions of credibility including “a flattening of the pitch, with little deviation from the baseline, and often a drop in pitch at the end of the sentence or phrase” (Zoller, 2010, p. 4). Munoz-Leiva (2012) discussed two studies that focused on the relationship between voice characteristics and perceptions of credibility. Both sexes judged lower pitched voices, whether male or female voices, to be more trustworthy, stronger, and more competent. Pentland, from the Massachusetts Institute of Technology (MIT) Media Lab, found that voices that fluctuated in volume and pitch were perceived as more responsive and accepting while voices that were more consistent were perceived as more determined and focused (Pentland & Heibeck, 2010).

Now that the historical and core theoretical foundations of non-verbal communication have been considered, this review will outline the current knowledge in NVC. This entails an examination of the impact of NVC. What is NVC and how does it affect students?

**Impact of Nonverbal Communication**

NVC serves to minimize the psychological distance between teacher and students and leads to affective and cognitive learning outcomes (White, 2016). Nussbaum identified two
categories of behavior that are supported by research as effective in facilitating communication: nonverbal and verbal. Nonverbal behaviors included gestures, movement around the room, eye contact, proximity, touch, smiles, and open body position, nodding, silence, voice fluctuation, and arranging the room for interaction (Epner & Baile, 2011; Nussbaum, 1992; Zoller, 2010). NVC is not dependent upon awareness. Its powerful effects are realized whether individuals are aware of their nonverbal behaviors or not (White, 2016).

The literature addressing the impact of NVC extends to a number of areas. Numerous studies discussed in this review provide evidence for the effect of NVC on student affective outcomes. There is strong support in this area. According to Wubbels and Brekelmand (2005) existing studies that sought to establish the effect of NVC on cognitive outcomes were weak since cognitive outcomes are indirect effects. Studies measuring cognitive outcomes relied exclusively on student perceptions of their academic growth across decades of research (Andersen, Norton, & Nussbaum, 1981; Beachboard, Beachboard, Li, & Adkison, 2011; Butland & Beebe, 1992; Sanders & Wiseman, 1990; Witt et al., 2004). Finally, the methodology of the predominant number of studies did not include teacher perception as a factor.

**Nonverbal Communication**

To help frame this discussion historically, it is appropriate to credit Mehrabian for his work on the role of NVC in the expression of emotion. He first studied the importance of NVC in the classroom in the 1960’s (York, 2015). Based on research in the early 1970’s, Mehrabian determined that at least 60% of communication is nonverbal with regards to feelings and attitudes. Since communication is comprised of behaviors that increase psychological closeness between people, the effects of communication are likely to be on affective learning rather than directly on cognitive learning (Mehrabian, 1971).
Anderson, Christenson, Sinclair and Lehr (2004) associated NVC with a teacher’s presentation style (McCroskey, Richmond, Sallinen, Fayer, & Baraclough, 1995; York, 2015). Argyle defined the term communication as “reducing the distance or improving the visibility” between two people (Argyle, 1975, p. 277). This could be interpreted on a physical or emotional plane, and is conveyed through certain characteristics of posture. Proxemics refers to spatial and physical relationships and is a component of NVC. Proxemics affect whether interaction is personal or impersonal (White, 2016). Other nonverbal skills in communication include smiles, nods, leaning toward a person, holding palms up, eye contact, and voice fluctuation (McCroskey et al., 1995; Zoller, 2010). The relationship between vocal volume, pitch, and tempo and perceptions of emotion and attitude also has an impact on communication (Argyle, 1975).

Lapakko voices caution in interpreting Mehrabian’s claims about the percentage of communication that is nonverbal. Researchers have reported Mehrabian’s findings with specific percentages, and failed to qualify that the foundational research only drew conclusion about nonverbal language associated with emotion (Lapakko, 1997). A number of methodological weaknesses in the original study completed by Mehrabian and Ferris are highlighted. Among these weaknesses were a small and non-diverse sample, the control of the potential emotional effect of verbal input, and the combination of studies used to draw conclusions. Although acknowledging the role of nonverbal behaviors in communication, the author warns against using rigid numerical measures and applying Mehrabian’s research beyond its intended scope. Other critiques support this view of methodological problems (Hegstrom, 1979). Mehrabian agreed with this viewpoint, as evident from his statement,

My findings are often misquoted. Please remember that all my findings on inconsistent or redundant communications dealt with communication of feelings and attitudes. This is
the realm in which they are applicable. Clearly, it is absurd to imply or suggest that the verbal portion of all communication consists of only 7% of the message. (Mehrabian, as cited in Lapakko, 1997, p. 65)

**Affective learning**

A number of studies found a relationship between NVC and affective learning but failed to find the same relationship between NVC and cognitive learning (Allen & Shaw, 1990; Babad, Bernieri, & Rosenthal, 1987). Affective learning is defined as learning that affects the willingness of students to receive and respond to information and is shown in emotions related to learning (Mottet et al., 2008). Affect is measured by student attitudes toward a class, course material, or the instructor (Andersen, 1980; Richmond, McCroskey & Johnson, 1987). Affective behaviors are demonstrated when students are motivated, have a desire to take a class again from the same teacher, want to pursue studies in that academic area, express an interest in the area, and are self-directed (Mottet et al., 2008). A study of 1000 college students from four cultures found that, in all cultures, nonverbal teacher communication was correlated with a positive attitude toward the teacher (McCroskey et al., 1995). In a study of 1,086 college students, views of teacher communication were measured using the NVC Measure (NIM) first used in 1987 by Richmond, Gorham, and McCroskey. These researchers found there was a high correlation between communication scores and student evaluations of these teachers (McCroskey et al., 1995).

In another study of 360 college students, there were strong correlations between NVC, motivation, and affective learning (Chesbro & McCroskey, 2001). Allen and Shaw studied 100 teachers to determine a relationship between communication behaviors and ratings by supervisors. They found that teachers who were rated high in communication were also rated as
more effective (Allen & Shaw, 1990). As with many other studies, however, Allen and Shaw found that communication was not a predictor of cognitive learning (Babad, Bernieri, & Rosenthal, 1987). Witt et al. (2004) examined the effects of NVC by determining effect sizes in a meta-analysis of 81 studies on teacher NVC and student learning. They concluded that teacher NVC had a substantial relationship with attitudes and perceptions of students in relation to their learning but a modest relationship with cognitive performance. In seminal work in this area, Andersen (1980) employed surveys with college students to determine the relationship between NVC and teacher effectiveness. She concluded that communication predicted 46% of variance in affect toward teacher, 20% of variance in affect toward content, and 18% variance in student behavioral commitment. Cognitive learning was not predicted by communication. Butland and Beebe (1992) hypothesized that verbal and nonverbal teacher communication would be significantly and positively related to student cognitive and affective learning and determined that NVC was significantly related to student perceptions of their learning and to affective learning.

**Cognitive Learning**

There is some evidence that links communication and relationships to achievement. One meta-analysis of over 900 studies of the connection between teacher-student relationships and achievement determined an effect size of .72, indicating a significantly strong link (Hattie, 2012). Negative student-teacher relationships in kindergarten have a long-lasting negative effect on achievement through grade school (Hamre & Pianta, 2001). Teachers report higher academic skills for students with whom they have a good quality relationship (Maldonado-Carreño & Votruba-Drzal, 2011). Most of this research is correlational. A few studies have directly linked communication to cognitive outcomes. In a review of research on NVC with
different cultures, Ikeda and Beebe (1992) found that NVC increases cognitive learning, recall, affective learning, and student perceptions of teacher effectiveness. Chesebro and McCloskey (2001) concluded that teachers who exhibited NVC behaviors that resulted in closer interpersonal relationships with students were more likely to generate student learning, but this conclusion was based on self-reports of student learning by college students. Finally, Chaudhry and Arif (2012) found that there was a significant linear relationship between Pakistani teachers’ nonverbal behaviors and student achievement.

The majority of studies on the effects of NVC have been conducted with undergraduate college students. One drawback of these studies is that there was no direct measurement of achievement. Achievement was typically measured by students’ perception of their learning, rather than more direct measures of learning. As an example, Beachboard et al. (2011) studied whether cohort arrangements improved feelings of belongingness and relatedness, and whether that had an impact on achievement. They found relatedness was a strongly significant predictor of students’ perceptions of the institution's contributions to their academic outcomes in cohorts. These results were consistent with previous research on belongingness and student persistence. Results of this study must be interpreted with the understanding that actual achievement was not measured, but rather students’ perceptions of how their institution contributed to their learning was used as a measure of cognitive growth. Similar results are evident in research on NVC (Chesebro & McCroskey, 2001).

Less research on NVC has been done in K-12 school settings than in college settings. In searching multiple databases such as Academic Search Complete, ERIC, and PsycINFO, there were less than ten applicable articles at the high school level and fewer at the elementary school level. Babad and Rosenthal (1987) isolated non-verbal skills of pre-school, remedial, and
elementary teachers and found that pre-school teachers demonstrated significantly greater NVC skills in terms of flexibility and warmth and fewer negative behaviors, such as hostility, nervousness, or anxiety. The authors reported these results in the context of a cultural belief that Israeli pre-school teachers were higher quality than remedial or elementary teachers (Babad & Rosenthal, 1987). In a study with ninth grade students, researchers found that, contrary to many of the studies cited above with college students, NVC did not influence affective learning (Mottet et al., 2008). Students were surveyed about the communication behaviors of their math/science teachers and also evaluated for affective factors. The authors of this study suggested that the assessment-based culture may result in students being concerned more with cognitive learning than affective learning. The results of this study may have been affected by the methodology. Since all participants were from one school, results could be affected by school culture or demographic characteristics.

Driven by the premise that students who relate positively to their teacher and have low levels of interpersonal conflict with their teacher will spend more time on learning tasks, McCroskey and McCroskey found that NVC was identified as being used by 93% of teachers and was fairly evenly used by elementary and secondary teachers enrolled in college communication courses (McCroskey & McCroskey, 1985). In surveying 100 teachers, Benzer (2012) found that many acknowledged the importance of NVC. One weakness of these studies is that the use of NVC was self-reported.

**Connections to Affective Concepts**

Immediacy, the psychological closeness between persons, is based on the principles of approach/avoidance and is supported by the natural tendency to approach what we perceive to be non-threatening and to avoid that which we perceive to be threatening (Mehrabian, 1971).
Butland and Beebe extended these principles in their Implicit Communication Theory with a theory that has its origins with Mehrabian and defines implicit communication as NVC that conveys underlying emotions (Butland & Beebe, 1992). Implicit Communication Theory is founded on the concept of two levels of communication: implicit and explicit. Both can include verbal and nonverbal elements. Explicit communication transmits the content of language while implicit communication transmits emotions. Mehrabian developed this theory and considered NVC and paralinguistic features of verbal communication, such as voice modulation, tone, pitch, and volume to convey messages of emotion, to be the components that made up implicit communication (Butland & Beebe, 1992). These paralinguistic structures are important components of communication (Zoller, 2007). In a study of 625 undergraduate students, Butland and Beebe (1992) determined that the most significant factor affecting reported student learning was the response of liking the teacher. In a qualitative study of elementary mathematics instruction, Battey (2013) asserted that relational interactions are equally as important as pedagogical factors in math achievement for students of color with low SES status.

The effect of the emotional connection between teacher and student has received broad attention in the literature but the terms used are varied by discipline. Education literature includes terms such as “engagement”, “rapport”, and “caring.” Literature in psychology and education examines “relatedness”. Finally, communication literature uses the term “immediacy” (McCroskey et al., 2014). Nussbaum (1992) conducted a meta-analysis of studies relating teacher behaviors to teacher effectiveness. He examined two sources: education literature and communication literature. Nonverbal behavior and its effect on relationships were not addressed in the education literature with the same terminology used in communication literature. He found the following behaviors, identified in education literature, as characteristics of teacher
effectiveness: frequent and intense teacher praise, frequent questioning or particular types, wait
time, and teacher enthusiasm (McCroskey et al., 2014). In the communication literature,
Nussbaum (1992) found two factors most supported by the research as connected to teacher
effectiveness; communication and NVC’s effect on relationships. Macsuga-Gage, Simonsen,
and Briere (2012) developed a framework for organizing specific behaviors to engage, manage,
and build relationships. There is little integration of the terminology from the education and
communication literature but they share a common theme of the effects of emotional connection
on student affective and cognitive outcomes. This literature review provides a basis for this
integration.

**Nonverbal Communication and Caring**

An examination of the theoretical and empirical educational literature on the concept of
caring reveals themes shared in common with the literature on NVC. Noddings has been a
major influence in articulating and developing the ethic of care (Noddings, 2005). This ethic,
based on relationship, is proposed as an alternative to reason as the foundation of education. The
literature indicated a relationship between the ethic of care and communication, specifically
critical teacher behaviors related to communication contributed to a caring environment (Cooper,
2004; Finn et al., 2009; Morganett, 1991; Nowak-Fabrykowski, 2012; Teven, 2001; Vogt, 2002).

The research on caring behaviors identifies how nonverbal behaviors related to
communication build psychological closeness and healthy interactions (Macsuga-Gage et al.,
2012; Vogt, 2002). Vogt (2002) used an exploratory methodology to study thirty-two Swiss and
English primary teachers to determine how male and female teachers conceptualize caring in
their teaching and to what extent the teachers’ ethics of teaching was oriented towards an ethic of
care. He concluded relationships are at the heart of both male and female teachers' views of
themselves and an ethic of care is a useful and appropriate framework for teaching. Morganett (1991) determined that teachers can create an environment that supports healthy relationships by listening and communicating that learning is important. NVC helps to build the relationships that promote healthy interaction with students and their families. Macsuga-Gage et al. (2012) examined what research tells us about specific behaviors to engage, manage, and build relationships. They determined regular and frequent positive communication with students and their families was essential. This communication should be specific and include both academic and social information and include opportunities to interact with students and their families, taking particular care to be culturally sensitive. These studies support the assertion that NVC promotes relationship-building through psychological closeness.

A number of studies highlight responsiveness and listening as teacher behaviors that promote caring. Noddings (2012) identified the critical teacher behaviors in creating a caring environment. They included listening, motivational displacement, and responding. All are dependent upon NVC. Listening includes attentiveness to the speaker and is important pedagogically, emotionally, and cognitively. Since NVC reinforces and communicates receptive and attentive listening, it is related to this teacher behavior. Motivational displacement is a phenomenon that occurs when a teacher’s motives are directed by the needs and concerns of the subject of care. Noddings introduced the idea of “motivational displacement”, a non-verbal mirroring of the feelings of someone with whom we are relating, as an essential characteristic of a caring relationship (Johnson & Reed, 2012). Additionally, the teacher must respond in a way that preserves the caring relationship even if the student cannot have their needs met at that time (Noddings, 2012). Teven (2001) examined the relationship among teacher characteristics and perceived caring and found results consistent with those of Noddings. Two hundred forty nine
undergraduate communication students filled out rating scales measuring perceived caring, NVC, socio-communicative style, and verbal aggression. They rated their teachers twelve weeks into the semester. Using a multiple correlation analysis, Teven (2001) concluded teacher responsiveness and communication were significantly related to perceptions of caring but teacher assertiveness was not. In this 2001 study, Teven concluded,

Given the concern for teacher effectiveness, the findings of this study suggest the importance of identifying those teacher characteristics which are likely to enhance perceptions of teacher caring, positive evaluations from students, and the very process of learning. (p. 167)

Other researchers have identified that encouragement behaviors promote caring. Nowak-Fabrykowski (2012) employed a grounded theory methodology in studying 32 pre-school teachers. Using observation checklists, Nowak-Fabrykowski identified caring behaviors in these teachers. She concluded the most frequent teacher caring behaviors were helping a child struggling with a task, verbally expressing kindness, and encouraging children with words and action. NVC provides a way to encourage students with actions rather than words. Keeley, Smith, and Buskist (2006) sought to determine the validity and reliability of the Teacher Behavior Checklist created by Buskist. They found 13 of 28 items on the checklist loaded onto the factor corresponding to being caring and supportive. Of those 13 items, five were directly related to NVC: sensitivity and persistence, rapport, encouragement and care for students, understanding, and accessibility.

NVC promotes healthy interaction with students and their families. This is of particular importance and relevance to school leaders (Donaldson, 2006; Macsuga-Gage et al., 2012). Researchers examined what research tells us about specific behaviors to engage, manage, and
build relationships. They determined that regular and frequent positive communication with students and their families was essential. This communication should be specific and include both academic and social information. Another behavior that built relationships was to provide opportunities to interact with students and their families, taking particular care to be culturally sensitive and incorporate the culture of families into the classroom and the school (Macsuga-Gage et al., 2012). Many of these interactions contain the element of NVC. Donaldson discussed the importance of leaders’ capacity to build relationships. He cites NVC as an important component of communication that relays emotion and contributes to trust and quality in relationships between principals and teachers (Donaldson, 2006). His focus is on the relationships between principals and teachers, not principals and students, however he does refer to the effect of school culture on students when he states, “How we function with one another is important to each person’s effectiveness and serves as a model for our students” (Donaldson, 2006, p. 68).

Doyle and Doyle (2003) outline five critical activities that model caring in schools: establishing powerful policies for equity, empowering groups, teaching caring in classrooms, caring for students, and caring by students. Caring for students involves teachers and leaders going beyond academic goals to create environments that improve the psychological and social lives of students. Although NVC is not addressed in their discussion, NVC’s focus on psychological connection would support their definition of a caring community. This emphasis on psychological connection is emphasized in a summary of the research program on Youth and Caring (Chaskin & Rauner, 1995). Bosworth (1995) reported that middle school students identified five themes in their definitions of caring: helping, feelings, relationships, personal values, and activities. Students identified characteristics of caring teachers in the following
areas: teaching practices, non-teaching activities, and personal characteristics. The primary area that involved NVC was in the area of personal characteristics.

Caring is, by its nature, about interactivity and connection. “Caring is grounded in relationships and action” (Chaskin & Rauner, 1995, p. 3). This view of caring, seen as individuals in the context of social relationships and cultural settings, is particularly relevant to this study as it examines how students may interpret nonverbal expressions. In fact, these researchers identify family life as the most common context in which caring behaviors are learned. Yet, schools are acknowledged to be the primary setting for nurturing and development of caring. In summary, Bosworth (1995) discovered that middle school students saw caring in the context of relationships when they mentioned that when teachers are nice, involved, and success-oriented, they are perceived as caring.

Additionally, a 2016 study, using data from the Measures of Effective Teaching Study, concluded that there were no significant differences in perceptions of teachers as caring between students who received free/reduced lunch and those who did not qualify (Cherng & Halpin, 2016). Subjects in this study included over 50,000 students in grades 6 – 9. Caring was measured using the Tripod student survey (Fergusen & Danielson as cited in Cherng & Halpin, 2016). The caring dimension in this survey has a calculated alpha of .78.

**Nonverbal Communication and Relatedness**

Research on relatedness also intersects with research on both caring and communication. Vogt (2002) connected caring to relatedness in describing the characteristics of a caring teacher. Caring teachers are committed. They express caring in a parental way. They value relatedness and understand that the trust and respect of a caring relationship is an important part of teaching. In a meta-analysis of the influence of teacher-student relationships on engagement and
achievement, Roorda, et al (2011) found a significant correlation between teacher-student relationships and engagement. Vogt (2002) concludes, “Understood as relatedness, caring is fundamental to primary school teaching, and many teachers place high demands on themselves to meet the ideal of a caring teacher” (p. 258).

A major theory including the concept of relatedness is Self Determination Theory (SDT), which was developed by Ryan and Deci. Ryan and Deci (2000), define relatedness as feeling significantly emotionally connected to others. Self-Determination Theory maintains that there are three basic human needs that affect psychological well-being and social development: competence, autonomy, and relatedness. SDT theory posits motivation as dependent upon these needs being met. The factors of competence, autonomy, and relationship dynamically interact to affect intrinsic motivation. Researchers have studied these factors in educational settings. For example, in an effort to confirm SDT, Van Nuland, Taris, Boekaerts, and Martens (2012) sought to determine the effects of autonomy, competence, and relatedness on motivation. They asked students in five secondary vocational schools to fill out inventories and surveys measuring intrinsic motivation, relatedness, and social support. The findings suggested that if students were unfamiliar with a task there was a positive relationship between relatedness and intrinsic motivation. The research of Ryan and Deci (2000) linked relatedness in three areas: motivation, engagement, and caring.

Relatedness is also connected to engagement (Park, Holloway, Arendtsz, Bempechat, & Li, 2012). These researchers stated that academic engagement is one of the primary predictors of student achievement. They studied the emotional engagement of 94 ninth grade students from two California schools using an Experience Sampling Method that yielded 4,388 responses. They determined that relatedness was significantly associated with engagement, but that
engagement was not a static attribute. Finally, there was considerable within-student variation throughout the study period during this three-year longitudinal study. Other researchers have determined that if students’ need for relatedness is satisfied, their engagement increases (Skinner & Belmont, 1993). The relationship between NVC and engagement will be discussed later in this literature review.

Research on relatedness also intersects with research on caring and NVC. Caring was connected to relatedness in describing the characteristics of a caring teacher (Vogt, 2002). Ryan and Deci (2000) studied the conditions that support or inhibit intrinsic motivation and described intrinsic motivation as “the natural inclination toward assimilation, mastery, spontaneous interest, and exploration that is so essential to cognitive and social development (p. 70). A sense of security and relatedness creates conditions in which intrinsic motivation is more likely to be present. Wubbels and Brekelmans (2005) confirmed that NVC has a particularly significant effect on relationships. Children who feel cared for and connected to parents and teachers exhibit more internal motivation for positive school behaviors (Ryan & Deci, 2000). This theory hypothesizes that environments that create a perception of social relatedness improve motivation and thereby influence achievement. As noted previously, NVC has similar effects.

A relationship between the concepts of caring and relatedness was also found in a study by Bieg, Rickelman, Jones, and Mittag (2013). These researchers conducted a study to determine if adolescents who perceive greater levels of teacher care show higher levels of intrinsic motivation, more positive learning emotions, and in turn, less anxiety in school situations. A univariate analysis of variance was used to analyze a cross sectional study of 870 eighth grade students. The results for both samples indicated students who perceived higher levels of teacher care showed significantly more intrinsic motivation, more interest, and more
learning enjoyment than students who perceived low levels of teacher caring. In summarizing salient findings from research, Saul (2015) lists caring and positive relationships as significant. He particularly emphasizes that students who are at risk are influenced most by strong relationships with their teachers. Roorda, et al (2011) concluded from their meta-analysis that at-risk children, including those from poverty, are particularly strongly influenced by the quality of teacher-student relationships. Tileston and Darling (2009) emphasized that the most important factor in helping students overcome diversity is a warm, caring relationship with their teacher.

Research indicates some variation in the effects of relatedness. There is evidence the perception of relatedness varies with age and grade level. Hagenauer and Hascher (2010) employed surveys and diaries with 356 middle school students to determine which needs were met through the lens of self-determination theory (STD). They concluded that there was a significant decline in student-teacher relations between sixth and seventh grade. Teachers’ care and instructional quality declined more significant than autonomy. Flunger, Pretsch, Schmitt, and Ludwig (2013) also examined young adolescents in their study of 220 eighth and ninth graders. This study examined whether adolescents who reported a high need for the factors in SDT benefitted more when those needs were met than adolescents who reported a low need. Results indicated that the effects of need satisfaction are more pronounced for students who have high need strength. In the previously discussed study by VanNuland et al. (2012), results indicated that if students were familiar with the task, there was a negative relationship between relatedness and intrinsic motivation. The study concluded that the STD Model does not work in all situations.

Contrary findings were reported in a meta-analysis of research on the correlations between relationships and engagement and relationships and achievement (Roorda et al., 2011).
These researchers determined a significant association between relationships and engagement but a weaker association between relationships and achievement consistent with the studies cited in this review. However, in some important outcome areas, the results of this meta-analysis were not consistent with above cited studies. The association between positive teacher-student relationships and engagement were statistically significant across grade levels but were most significant at the secondary school level and for students who were economically disadvantaged. These findings lend credibility to the NVC phenomenon and its influence on affective outcomes for students.

**Nonverbal Communication and Rapport**

Rapport is a term used primarily in education and psychology that connects to the themes of caring, relatedness, immediacy and engagement. Tickle-Degnen and Rosenthal (1990) sought to specifically connect the concept of rapport to NVC. They defined three components of rapport: mutual attentiveness, positivity, and coordination. They found the strength of these correlates changed over the course of a relationship, but all were present in a state of rapport. They also emphasized the importance of context, supporting the practice of authentic observation. These researchers concluded that NVC demonstrates significant correlation with the experience of rapport. Nelson, Grahe, and Ramseyer (2016) used the work of Tickle-Degnen and Rosenthal to determine its validity and identify the behavioral correlates. They determined that subjective measures of interactions that are coordinated and well-balanced were positively associated with measures of rapport.

Rogers (2015) found that the Learning Alliance Inventory (LAI) was a valid predictor of a significant correlation between immediacy and rapport, indicating the synonymous nature of these terms. In Rogers’ study, immediacy and rapport had an indirect effect on college students’
learning. In another study focusing on the use of an instrument, Lammers and Gillaspy (2013) determined a significant correlation between rapport and student outcomes using the Student-Instructor Rapport Scale with college students taking online courses. This scale was determined to be effective in measuring rapport. In his creation of the term *Communicative Intelligence* (CI), Zoller (2015) defines Communicative Intelligence as,

> …a consciously mindful state where the deliberate application of verbal and nonverbal skills and moves are used to achieve an alignment between the intended message and the manner in which it is perceived to build rapport, model empathy, and impact trust. (p. 303)

Zoller makes a case that CI is an effective attribute to achieve cross-cultural collaboration. Additionally, he focuses on rapport as one of seven essential skills that are affected by NVC skills in his books and training (Zoller, 2010). He specifically identifies voice, gestures, breathing, and mirroring as key nonverbal components influencing rapport.

**Nonverbal Communication and Engagement**

Engagement is another theme that is closely related to NVC. Engagement is comprised of three constructs in literature (Anderson, Christenson, Sinclair, & Lehr, 2004; Boykin & Noguera, 2011; Harris, 2011). These three types of engagement are behavioral, cognitive, and affective. This study focuses on affective engagement. Affective engagement involves characteristics such as emotional connection, positive attitudes, and interest (Boykin & Noguera, 2011). White (2016) emphasizes that engagement is promoted through classroom communication, and healthy relationships with teachers are also enhanced by student engagement. Affective engagement is related to caring, relatedness, rapport, and NVC.
Park et al. (2012) used experience sampling and method surveys with 34 ninth grade students from two California schools. They determined that relatedness is significantly associated with engagement, but there was a lot of variation within individual students. Neill and Caswell (1993) stated that to maintain student engagement a teacher must communicate that he/she cares about the subject and about the students.

Birdwhistell (1970) describes communication as an implicit system of engagement, rather than an action-reaction system. This conceptual view of communication has engagement as a foundational factor. Zoller (2010) reinforces this theory in his discussion of engagement, which he terms rapport. There is a dynamic relationship between the parties engaged in communication (Birdwhistell, 1970). Nonverbal mirroring is evidence of engagement. Nonverbal mirroring occurs when the receiver mimics the tone, breathing, and level of energy of the communicator (Zoller, 2010). Noddings introduced the idea of “motivational displacement’, a non-verbal mirroring of the feelings of someone with whom we are relating, as an essential characteristic of a caring relationship (Johnson & Reed, 2012).

Jensen (2013) discussed seven factors that affected classroom engagement for students in poverty. He asserted that children in low socioeconomic homes have smaller vocabularies and may not understand classroom level vocabulary, thus hindering engagement. He also indicated that chaotic or unsupportive relationships can affect student engagement. NVC increases caring relationships and may enhance the breadth of communication opportunities for students. Harris (2011) reported that social support from teachers had an important effect on student engagement, even when controlling for parental support and poverty.

There appears to be a reciprocal relationship between teacher behaviors that promote engagement and student engagement (Boykin & Noguera, 2011; Skinner & Belmont, 1993).
Skinner and Belmont (1993) found a reciprocal relationship between teacher perceptions of student engagement and teacher behaviors toward students. In their study of 144 children in grades three to five, they found that students who are behaviorally disengaged receive teacher responses that support their disengagement. Boykin and Noguera (2011) reinforced this when they noted that the student’s approach to learning, which they equate to engagement, was a major contributor to math growth and had a greater effect than instructional time. These researchers also discussed the reciprocal nature of engagement and instructional quality, supporting the contention that “student engagement is mediated by student perception of teacher behaviors.” In other words, teachers react to engaged students by behaving in ways that promote more engagement and react to non-engaged students in ways that decrease engagement. Certainly, if students’ perceptions of teacher behaviors have an effect on engagement, NVC has the potential to promote engagement.

**Neuroscience, Physiology, and Nonverbal Communication**

Neuroscience supports the need for NVC that promotes positive relationships, since these positive relationships have a physiological effect on the brain. Some students experience higher levels of stress than others. The longer children are exposed to adversity, the more likely they are to fail academically (Spilt, Hughes, Wu, & Kwok, 2012). Traumatic stress and lack of connectedness lead to feelings of hopelessness and detachment (Bolland, Lian, & Formichella, 2005).

The hippocampus, an area of the brain that facilitates memory, stress control, and emotional regulation, is larger in children who have experienced a supportive environment in early childhood (Luby et al., 2012). Oxytocin, released when trust and positive social relationships are experienced and during physical activity, has been shown to increase
hippocampus growth in animal studies when administered for longer than three weeks (Leuner, Capaniti, & Gould, 2012).

Another area of the brain affected by chronic stress is the prefrontal lobe, responsible for regulating memory, language, impulse control, and social reasoning (Adolphs, 2003; Evans & Schamberg, 2009). In a study with rural children in upstate New York, researchers found that prolonged exposure to stress causes decreased activity in multiple physiological systems. This phenomenon is called allostatic load, which can affect the ability to deal with academic tasks and social stressors. Responsive adults can help to mitigate these effects (Evans, Kim, Ting, Tesher, & Shannia, 2007). Adolphs (2003) details the neurophysiological foundation of social behavior, emphasizing the role of the brain in interpreting visual cues. This has ramifications in interpreting NVC and highlights the importance of consistent and sustained positive relationships. NVC has a direct and substantial effect on these relationships.

Teachers’ interaction with students can reduce the effects of stress and trauma through psychological and physiological paths. Mirror neurons help humans to empathize and take on the emotions of others (Iacoboni, 2009). If teachers are relaxed and breathing in a deep manner, students will begin to mirror these physiological behaviors (Zoller, 2010). As noted previously, Noddings introduced the idea of “motivational displacement’, a non-verbal mirroring of the feelings of someone with whom we are relating, as an essential characteristic of a caring relationship (Johnson & Reed, 2012). A study at Oregon State University found that improving caring and warm interactions, childhood stress was reduced in the classroom (Oregon State University, 2016). In view of the effects of stress on the brain, and subsequent effects on learning, NVC is a valuable skill for teachers to use to facilitate affective and cognitive outcomes.
Summary of Review of the Literature

In summary, NVC has been acknowledged as a vital factor in communication for centuries. As the study of NVC developed as a science in the twentieth century, concepts and vocabulary were developed in a variety of academic disciplines to frame knowledge on this topic. NVC’s effect on interpersonal relationships and rapport is a phenomenon that stems from this larger field and has been studied extensively for decades. Connections in research to concepts such as caring, engagement, rapport, and relatedness are pervasive. Neuroscience has established the need of students to experience good quality relationships. This literature review has established that NVC plays an important role in affective development. Although the effects of NVC have been studied widely, there is a scarcity of studies in K-12 classrooms and on teacher perceptions and awareness of NVC. Finally, most research on NVC has been quantitative research. A mixed methods approach will add results of qualitative research to the field of knowledge. Understanding teachers’ awareness of their NVC skills and the effects of these skills will add to our knowledge of rapport-building in the classroom.

Conceptual Framework

The purpose of a conceptual framework is to demonstrate how a study fits into the existing research, identify gaps in this research, and articulate the contribution that will be made to the field of study (Maxwell, 2013). The conceptual framework represents the dual problems focused upon in this study. Research that NVC contributes to rapport at the K-12 level is not as well established as research at the college level. Little qualitative research has been done to examine teachers’ consciousness of their NVC skills. This study focuses on how NVC, such as gestures, proximity, eye contact, touch, paralanguage, and body position affects rapport and interpersonal relationships between student and teacher, and whether teachers possess awareness
of their NVC skills (Nussbaum, 1992; Zoller, 2007). Immediacy, the sense of psychological
closeness between student and teacher, is a term used extensively in communication literature
and its importance in a college educational setting has been the subject of research for almost
fifty years (Finn et al., 2009; Witt et al., 2004). NVC, in particular, has been connected to
student affective and cognitive outcomes (Chesebro & McCroskey, 2001). Relatively little
research has been conducted to determine K-12 teachers’ awareness of their NVC skills (Worley,
Titsworth, Worley, & Cornett-DeVito, 2007). The intervention of this study through the sharing
of the correlation between teachers’ observed NVC skills and their perception of these skills will
strengthen their Communicative Intelligence (Zoller, 2015).

Researchers in other academic fields, such as psychology, anthropology, and sociology,
have studied concepts that are related to NVC. Among these concepts are caring, engagement,
rapport, and relatedness (Boykin & Noguera, 2011; Macsuga-Gage et al., 2012; Ryan & Deci,
2000). Furthermore, these concepts have been demonstrated to be interrelated (Park et al., 2012;
Vogt, 2002). Thus, based on the current research, students experience and perceive
psychological closeness through NVC and this phenomenon results in affective (caring,
engagement, rapport, and relatedness) outcomes. Teachers who develop Communicative
Intelligence can strengthen the effect of their NVC skills on these affective outcomes (Zoller,
2015).
The conceptual framework brings together a number of factors in a unique way. Determining teachers’ perceptions about their own NVC skills may indicate whether they identify and recognize these skills. Sharing information about the correlation between their perceptions and the observed NVC behaviors will move teachers’ awareness from the subconscious to the conscious level, thereby strengthening the effectiveness of NVC in contributing to affective outcomes through increased awareness. Measuring rapport in K-12 classrooms will contribute to the limited research on NVC with this population. This conceptual framework builds on the current literature on NVC and incorporates K-12 teacher awareness.
factors in an effort to determine its applicability and significance to this field of study. Figure 2.1 displays a graphic representation of the conceptual framework.
CHAPTER THREE

METHODOLOGY

The methodology of this study was chosen specifically to address the problems that are the drivers for this research. As mentioned, one problem is that NVC has not been adequately studied at the K-12 level. The ability of teachers and leaders to connect emotionally with students has a significant effect on affective learning, and an indirect effect on cognitive outcomes (Butland & Beebe, 1992; Ikeda & Beebe, 1992; Sanders & Wiseman, 1990). The salient research on NVC has been conducted with college students since the mid-1970’s (Pogue & Ahyun, 2006; Wilson & Locker, 2008; Witt et al., 2004), however there is a dearth of literature on how NVC skills can impact instruction outside of a university setting. Thus, there is a need to conduct this research at the K-12 level. The second problem addressed in this study is that it is unclear whether teachers are aware of the NVC skills that contribute to their effectiveness. Pentland and Heibeck (2010) state that many people have expertise in using NVC to influence others, but most are doing it subconsciously. If the nonverbal skills of their teachers and the contribution of these skills to affective outcomes are significant, an increased awareness and knowledge of these skills would further the efficacy of teachers in their effort to impact student outcomes (Zoller, 2015).

NVC research has predominantly been conducted using a quantitative methodology (Worley et al., 2007). In a 2015 review of twenty-seven empirical studies and five meta-analyses on the topic of NVC for this study, only three of the studies were qualitative or mixed method. The large majority of studies (63%) were quantitative using a correlational design type. This analysis further revealed that the field of communication predominantly initiated and led research in NVC and these studies were predominantly done with college undergraduates. These
studies, published between 1971 and 2012, were in the fields of communication, education, psychology, and sociology and examined concepts such as immediacy, caring, rapport, engagement, and nonverbal behaviors.

**Research Goals and Questions**

In addition to the research precedent, the research questions influenced the choice of methodology. The goals of this study were to identify NVC skills of K-12 teachers, to examine the perceptions of these teachers about their NVC and how this affects cognitive and affective outcomes, to determine whether these perceptions are accurate, and to share the findings with teachers in order to promote conscious use of NVC skills. These goals were achieved through the following research questions:

RQ 1. What NVC behaviors are used by K-12 teachers in a large district in Maine?

RQ 2. How do teachers’ NVC skills correlate with measures of rapport from student surveys?

RQ 3. How do teachers’ awareness and knowledge of NVC correlate with their observed NVC behaviors and student perceptions of rapport?

RQ 4. What are teachers’ reactions to the congruence or lack of congruence between the consciousness of their own NVC skills as indicated in the first interview and the data indicating their observed NVC skills?

A mixed methods convergent parralel design was used in this study. The rationale for this methodology stemmed from the research questions. For RQ 1 (What NVC behaviors are used by K-12 teachers in a large district in Maine?) and RQ 2 (How do teachers’ NVC skills correlate with measures of rapport from student surveys?), quantitative methods were necessary to record, count, and classify NVC behaviors, measure rapport, and determine correlations. Qualitative
research was justified by RQ 3 (How do teachers’ awareness and knowledge of NVC correlate with their observed NVC behaviors and student perceptions of rapport?) and RQ 4 (What are teachers’ reactions to the congruence or lack of congruence between their consciousness of their own NVC skills as indicated in the first interview and the data indicating their observed NVC skills?).

Using a mixed methods design was most appropriate for this research for a number of reasons. First, the research questions required the use of both approaches. A mixed method approach brought together the strengths of both types of research. This framework was appropriate for this study because qualitative approaches reflect the participants’ perceptions and values and quantitative approaches inform those perceptions and values. Together the two methods of this phenomenological approach provided rich data that are authentic and relevant to teachers (Glesne, 2011; Seidman, 2013).

**Operational Definitions**

For the purposes of this study, the following operational definitions apply:

**Immediacy** – the sense of psychological closeness created by NVC (Mehrabian, 1971).

**Nonverbal Communication (NVC)** – communication made up of behaviors including gestures, movement around the room, eye contact, proximity, smiles, relaxed body position, and vocal expression (Richmond, McCroskey, & Johnson, 2003).

**Caring** – a construct, rooted in relationship, and made up of behaviors that convey communication, responsiveness, cultural sensitivity, and encouragement (Macsuga-Gage et al., 2012; Morganett, 1991; Noddings, 2012; Nowak-Fabrykowski, 2012; Teven, 2001).

**Engagement** – the commitment and investment in task along with attention and effort.
Affective Engagement - involves characteristics such as emotional connection, positive attitudes, and interest (Boykin & Noguera, 2011).

Affective Learning - learning that affects the willingness of students to receive and respond to information and is shown in emotions related to learning (Mottet et al., 2008).

Relatedness – feeling significantly emotionally connected to others (Ryan & Deci, 2000).

Rapport – a close and harmonious relationship in which people or groups concerned understand each other’s ideas and communicate well (Zoller, 2015).

**Design**

A mixed methods convergent parallel design was used in this study (Maxwell, 2013). This method consists of concurrent collection of both qualitative and quantitative data, with both methods receiving equal emphasis, followed by a merging of data in analysis and interpretations (Creswell & Plano-Clark, 2011). This is followed by more qualitative data collection after providing feedback, adding a participative component. Although most NVC research has been quantitative, adding the qualitative measures allows not only the physical NVC behaviors to be studied, but also the individuals’ sense-making and understanding of these behaviors (Maxwell, 2013; Worley et al., 2007). Using a mixed methods design allowed for each method to inform the other and elucidated the area of inquiry more fully (Vogt, Gardner, & Haeffele, 2012). A more complete understanding of NVC’s effect on rapport in the K-12 classroom resulted from using both methods (Creswell & Plano-Clark, 2011). The quantitative methodology involved collecting, quantifying, categorizing, and analyzing NVC behaviors from videotaped lessons and from student reported measures of rapport. The qualitative methods included the collection and interpretation of narrative and visual data through coding of interview transcripts and observations (Gay et al., 2011). Then, data from both methodologies were merged in the
analysis by cross-tabulating qualitative and quantitative data leading to the interpretive phase of the study, which reflects on how the mixed methods approach contributed to a more complete understanding of the effect of NVC skills on rapport in the K-12 classroom (Creswell & Plano-Clark, 2011). See Figure 3.1 for a model of the research design.

A mixed method approach was chosen to allow for an “interpretive synthesis” of the data to yield essential knowledge about the phenomenon of NVC in the classroom ((Miles, Huberman & Saldana, 2014, p. 103). This approach looked at a number of examples to investigate this phenomenon (Glesne, 2011). Other qualities of this study were that it was phenomenological (based on experiences of the teachers), heuristic (understanding unfolds through the research process), and bounded (clearly identified within the context of K – 12 schools) (Gay et al., 2011).

Six Maine teachers from a large district, approximately in the top 20% of district size ranking in Maine, volunteered as participants in the study. Two teachers each represented elementary, middle, and high school levels. A series of two semi-structured interviews were conducted (Gay et al., 2011). The first interview occurred concurrently with measures of rapport survey data collection, classroom observations, and videotaping of lessons, and explored each teacher’s ideas about communication and rapport in the classroom, perceptions of their own communication behaviors, and reflections on specific communication strategies used to build rapport (RQ 3. How do teachers’ awareness and knowledge of NVC correlate with their observed NVC behaviors and student perceptions of rapport?)

Videotaping three one-hour lessons of each participant before the second interview lent validity to the nonverbal measures, since teachers had no awareness NVC was the topic of this study. Tickle-Degnen and Rosenthal (1990) emphasized the importance of context, supporting the practice of authentic observation. The information teachers received prior to the second
interview explained that the topic of the research was the effect of NVC skills on rapport in the classroom. Videotaped lessons were coded quantitatively using Zoller’s (2007) Twenty-Two Nonverbal Patterns. Classroom observations that took place during the videotaping sessions were used to rank participants to identify subjective impressions of rapport in the classroom. Also prior to the second interview, de-identified student survey data was collected from each participant’s class (RQ 2. How do teachers’ NVC skills correlate with measures of rapport from student surveys?, and RQ 3. How do teachers’ awareness and knowledge of NVC correlate with their observed NVC behaviors and student perceptions of rapport?). Thus, this methodology used triangulation to integrate information from multiple sources to inform the research questions (Creswell, 2012; Creswell & Plano, 2011).

Figure 3.1 displays the methods in graphic form. Each row in this figure represents methods that were simultaneously employed. Thus, following down row by row provides a sequential visual of the convergent parallel design. In practice, the methods are not entirely discreet and there was some overlap of the steps in the design, but generally the methods were implemented as depicted in Figure 3.1.
Figure 3.1. Convergent Parallel Mixed Methods Research Design

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Products</th>
<th>Procedures</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Videotaped lessons - student survey</td>
<td>QUAN data collection - Coding - Numerical item scores</td>
<td>QUAL data collection - Transcripts - Observation notes</td>
<td>QUAL data collection - Observation notes</td>
</tr>
<tr>
<td>Descriptive statistics - Inferential Statistics</td>
<td>QUAN data analysis - Frequencies/Means - Standard Dev. - t-tests between grade levels - Pearson corr.</td>
<td>Products</td>
<td>Qualitative data collection and analysis</td>
</tr>
<tr>
<td>Semi-struct. Interviews after feedback</td>
<td>QUAL data analysis - Multi-level coding for thematic analysis</td>
<td>Products</td>
<td>Major themes</td>
</tr>
<tr>
<td>Products</td>
<td>Interpretation</td>
<td>Products</td>
<td>Discussion</td>
</tr>
</tbody>
</table>

Diagram based on Creswell & Plano-Clark, 2011
Population and Sample

A purposeful sampling technique was employed in this study (Vogt et al., 2012). This method was chosen in order to gather relevant information that corresponds to the research goals in a setting that requires minimally invasive research methods. The district from which the sample was taken conducts a student survey of classroom climate. Teachers are on a three-year evaluation cycle, so only 1/3 of the teachers in the district conduct this survey in their classroom each year. Teachers are also formally observed every three years and are provided instructional feedback. Participants in this research were chosen from among those teachers who were in the formal stage of evaluation during which they conducted student surveys. In choosing teachers at as variety of grade levels and varying levels of experience (from 7 to 25+ years), I chose teachers who are broadly representative of K-12 educators. Purposeful sampling could help to achieve representativeness, illustrate heterogeneity, or highlight ‘critical individuals”, and I chose the former two reasons (Maxwell, 2013, pg. 97). This purposeful sampling likely provides the most robust data from which to draw conclusions about this phenomenon (Glesne, 2011; Seidman, 2013).

Although not as rigorous as a probability sample, this method provided an aspect of representativeness. Creswell (2012) described and compared populations, sampling frames, and samples. The population of this study was Maine teachers. This population was chosen to maximize generalization to teachers in a variety of teaching levels in a K-12 system. The sampling frame or target population was teachers in a large district in Maine whose formal evaluation took place in the 2017 – 2018 academic year. This insured that student rapport surveys were available. The sample was six teachers in this population who volunteered to participate. Eligible teachers in a large district in Maine (approximately in the 20th percentile of
total student enrollment in Maine) were contacted by their principal and asked to participate.
Two volunteers emerged from each of three grade level groupings; elementary, middle, and high
school. The sample of six teachers provided a large enough sample to conduct a meaningful
qualitative analysis but small enough to be practical within the time frame of this research (Miles
et al., 2014).

Participants were provided with a consent form in an email and in hard copy. This
information provided an overview of what the participant was be asked to do, potential risks and
benefits, confidentiality, permission to observe in the teacher’s classroom, permission to
videotape three one-hour lessons, permission to collect de-identified student survey data, and
contact information of the researcher (See Appendix A). Consent to use survey data collected by
the schools was also sought using a District Consent Form (See Appendix C).

Data collection

Once participants were chosen, a one hour interview was scheduled with each teacher
(See Interview Protocol # 1, Appendix B). The researcher kept the principals informed of the
interview and classroom observation/videotaping schedules. The district was asked to share de-
identified student survey data collected by the district in each participant’s classroom as part of
the teacher evaluation and performance system. Then three one-hour classroom observations
were scheduled on three separate days between January and April, 2018. Observation notes were
recorded and the three one-hour lessons were videotaped.

The three hours of videotape for each participant allowed me to randomly choose four
ten-minute segments for each teacher. Each segment was then viewed five times during which I
coded three or four nonverbal behaviors each time. This strategy minimized the chances of
missing nonverbal communication behaviors, as would be likely to happen in a live observation.
The observation notes collected during each videotaping session was used to subjectively rank participants.

Multiple semi-structured interviews were conducted. The first interview was employed to get details of the teachers’ knowledge and perceptions of the role of communication in building rapport, and the second sought reflections on the meaning of that experience after feedback (Seidman, 2013). Before or during the weeks of the three observation/videotape sessions, the first interview, which focused on details of the teachers’ knowledge and perceptions, took place with each teacher. Once all of the interviews were transcribed, the videotapes were coded quantitatively and these initial results were drafted in the form of frequency charts. The second interviews, focusing on the meaning of the teachers’ knowledge and perceptions after feedback, were scheduled in May and June, 2018 (See Interview Protocol # 2, Appendix B). Preceding this interview, I reported the preliminary results to each participant.

**Instruments**

Miles et al., (2014) argue that prior instrumentation is advised if there is minimal researcher impact, and multiple methods are used. For this reason, I prepared the interview protocols (See Appendix B) to focus the questions on communication that are adapted from an instrument used in a study examining instructional communication competence (Worley et al., 2007). The protocol of these researchers was created based upon a review of the literature on instructional communication competence, elements of classroom climate, and examples of teacher observation practices. The protocols were then piloted and calibrated. My protocol, adapted from this study, and the semi-structured interview approach created consistency across interviews for purposes of comparison to identify links among participants (Miles et al., 2014; Seidman, 2013).
The measure of rapport consists of some items on a student perception survey adapted from one developed by the Maine Schools for Excellence (MSFE) with the assistance of the American Institutes of Research (AIR). Internal reliability coefficient alphas and inter-item validity for this instrument were determined by previous research. An original assumption of this study was that one instrument would be used in K-12 classrooms in this district. Unfortunately, adaptations made by the district resulted in three separate forms of the survey, making analysis of aggregate scores less meaningful.

Three schools participated in the survey, and results were received from 119 students. Of the three survey forms administered, the completion results were 37 High School surveys (31%), 51 Middle School surveys (43%), and 31 Grade 3-5 surveys (26%). Two teachers were represented in each of the three categories. Three constructs were created for the survey: rapport, credibility, and whole survey. The alpha level for all significance measures was set at .05. A reliability analysis was carried out on all three forms of the survey using the constructs of rapport, credibility, and whole survey. Alpha analysis demonstrated that the High School survey reached acceptable reliability for all three constructs (rapport = .805; credibility = .862; whole survey = .928). One item was removed from each of the constructs in the Middle School surveys. Item 8 was removed from the rapport construct and item 5 was removed from the credibility construct. This increased the Cronbach’s alpha somewhat, but reliability measures remained fairly low, with a higher alpha for the whole survey (rapport = .649; credibility = .688; whole survey = .808). The Grade 3-5 survey yielded even lower reliability scores (rapport = .515; credibility = .629; whole survey = .653). One item was removed because it had 0 variance. Removal of two other items from the rapport construct resulted in an increase in alpha for
rapport to .560. Adapted surveys are in Appendix E. Rapport construct items are highlighted.

Table 3.1 shows the Cronbach Alpha results.

Table 3.1 Cronbach’s Alpha for rapport survey

<table>
<thead>
<tr>
<th>Construct</th>
<th>Cronbach’s Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rapport</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>.805</td>
<td>11</td>
</tr>
<tr>
<td>Middle School</td>
<td>.649</td>
<td>8</td>
</tr>
<tr>
<td>Grades 3 – 5</td>
<td>.560</td>
<td>4</td>
</tr>
<tr>
<td><strong>Credibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>.826</td>
<td>22</td>
</tr>
<tr>
<td>Middle School</td>
<td>.688</td>
<td>17</td>
</tr>
<tr>
<td>Grades 3-5</td>
<td>.629</td>
<td>11</td>
</tr>
<tr>
<td><strong>Whole Survey</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>.928</td>
<td>33</td>
</tr>
<tr>
<td>Middle School</td>
<td>.808</td>
<td>25</td>
</tr>
<tr>
<td>Grades 3-5</td>
<td>.653</td>
<td>14</td>
</tr>
</tbody>
</table>

**Data Analysis**

Data analysis activities included first and second cycle coding of videotapes and interview transcriptions with definitions, interview protocols, qualitative coding, and analytical memos (Miles et al., 2014). The primary mode of analysis was coding. Coding was not only a preparation for later analysis but was a rich exercise in analysis itself (Marshall, 1999; Maxwell, 2013). The heuristic nature of coding aided in the discovery of knowledge of NVC behaviors of participating teachers, their perceptions and awareness of these behaviors, and changes in awareness after feedback (Miles et al., 2014). According to Glesne (2011), “Qualitative
researchers code to discern themes, patterns, processes, and to make comparisons and build theoretical explanations” (p. 194). The coding was not all analytical, however. There were two types of coding used in this research. The analytical coding of interview transcripts covered abstract concepts such as immediacy, caring, rapport, relationships, and engagement. The quantitative coding of the videotapes covered the concrete NVC behaviors. This use of coding in a mixed methods study complemented my research questions (Vogt et al., 2012). Quantitative data was also collected from the student survey as a measure of rapport.

The first cycle of coding used simultaneous coding by combining three types of coding – protocol, process, and provisional (Miles et al., 2014). Protocol coding is used to describe observable action, using terms validated by previous research by Zoller (2007) (See Figure 3.3). NVC behaviors observed in the classroom were coded with this method. Process coding was used to record environmental factors or impressions of rapport building behavior in the classroom. Finally, provisional coding was used in interview coding to include some of the operational terms in this study (Miles et al., 2014) (See Figure 3.2). This coding approach was the initial approach, but as the cycle of deductive/inductive analysis progressed, codes were modified or enlarged to include sub-codes. The provisional codes are some of the operational terms in this study. These were used to code interview transcripts. First cycle coding was repeated with data from the second interview.
Table 3.2 Initial provisional codes

Immediacy (I)
Caring (C)
Engagement (E)
Rapport (RA)
Affective engagement (AE)
Affective learning (AL)
Relatedness (R)

The protocol codes were obtained from Zoller’s (2007) study of the NVC of teachers from five countries. One code, “Humor” was not used as it involves a combination of verbal and nonverbal aspects. These codes relate directly to the RQ 1 (What NVC behaviors are used by K-12 teachers in a large district in Maine?) as they provide measures of NVC (see Appendix D). Zoller described each of these codes narratively in detail (Zoller, 2007). Videotapes were coded multiple times from the four ten-minute segments randomly selected from the three one-hour videos of each teacher participant. This added reliability to the codes. Table 3.3 provides the research support for these protocol codes.
Table 3.3 Foundational studies supporting Zoller’s (2007) coding structure

<table>
<thead>
<tr>
<th>Codes</th>
<th>Description</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gestures</strong> (Parakinesics)</td>
<td>Teacher to student/class talk – gesture to student or class</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teacher to object talk(concrete or abstract) – gesture to other than a person board/lab/book/location</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teacher to outside the room – gesture outside room</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frozen hand gesture, including beats</td>
<td></td>
</tr>
<tr>
<td><strong>Voice</strong> (Paralanguage)</td>
<td>6. Voice pattern – rhythmic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Voice speed – increase from baseline</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Voice speed – decrease from baseline</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. Loud-silent-softly (relative to baseline)</td>
<td></td>
</tr>
<tr>
<td><strong>Expectations &amp; Respect</strong> (Parakinesics)</td>
<td>12 Low expectation: Moving body, indirect eye contact when making a point</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13. High respect: still body, direct eye contact when listening to student</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14. Low respect: moving body, indirect eye contact when listening to student</td>
<td></td>
</tr>
<tr>
<td><strong>Pausing &amp; Breathing</strong> (Paralanguage)</td>
<td>16 When pausing, teacher is moving</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 Breathing high in the chest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 Breathing low in the abdomen</td>
<td></td>
</tr>
<tr>
<td><strong>Voice &amp; Breathing</strong> (Paralanguage)</td>
<td>20 Voice flat while breathing low</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21 Voice rhythmic while breathing high</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22 Voice rhythmic while breathing low</td>
<td></td>
</tr>
</tbody>
</table>
The second cycle coding provided a deeper analysis in which chunks of data were classified thematically, or as categories and constructs (Miles et al., 2014). Two types of analysis of coding from videotapes, observations and interviews were employed. Semiotic analysis was used when focusing on NVC behaviors in the videotapes and observations. These behaviors connote meaning within the context of the classroom. This meaning is a social code that may need adaptation in varying cultural and socioeconomic factors (Battey, 2013; Glesne, 2011; Greenbaum, 1983; Johnson & Miller, 2002; McCroskey et al., 1995). Secondly, thematic analysis allowed for a deeper understanding of the crossover themes, and an opportunity to recognize dynamic patterns between and among variables (Glesne, 2011; Miles et al., 2014; Vogt et al., 2012). This thematic analysis was both emic (from participants’ points of view) as well as etic (from researcher’s point of view) (Maxwell, 2013).

The steps in the data analysis were as follows:

1. First cycle coding
2. Complete protocol coding of videotapes (Miles et al., 2014)
3. Transcribe each of the first interviews.
4. Complete process and provisional coding of initial interview transcriptions (Miles et al., 2014).
5. Read through transcriptions, written notes and memos (Gay et al., 2011; Maxwell, 2013; Miles et al., 2014).
6. Second cycle coding:
   a. Use semiotic analysis to interpret protocol coding of videos (Glesne, 2011; Miles et al., 2014).
b. Use descriptive analysis to develop emic categories using the interviewee’s words and perceptions (Maxwell, 2013).

c. Use descriptive analysis to develop etic categories using the observation notes (Maxwell, 2013).

d. Use theoretical analysis using etic categories to organize data into the researcher’s conceptual framework, inductively revising as necessary (Maxwell, 2013).

e. Conduct a comparative analysis between interview transcription coding, video coding, and observation note coding for each participant to identify congruent and incongruent factors.

7. Employ descriptive and inferential statistics to determine standard deviations and means for survey data. Conduct correlations to compare factors.

8. Conduct a synthesis among all six teachers to determine patterns of similarities and differences (Creswell, 2013).

9. Conduct a cross-grade analysis.

10. Conduct second interviews and repeat steps 4 - 6.

11. Conclude with a discussion reflecting on how a mixed method approach contributes to an increased understanding of the effects of NVC skills of K-12 teachers on rapport.

QSR NVIVO 10 and SPSS were used to manage and interpret data. These systems assisted in analysis, search functions, management and organization of transcribed data. QSR NVivo enabled comparisons among codes and categories of interviewees. SPSS facilitated descriptive and inferential statistical processes. Finally, graphic representations of data were generated from both, aiding in interpretation (Creswell, 2013).
Trustworthiness

There were four issues recognized as relevant to trustworthiness: choice of literature, recruitment strategies, axiological assumptions, and inherent bias. One area of potential bias was in the literature review. Since the choice of books, articles, and studies is made by the researcher, it was important to reflect upon these choices and engage in efforts to reduce bias. One of the primary ways in which this was addressed was to read extensively and attempt to include a broad base of literature with contradictory results (Cherng & Halpin, 2016; Lapakko, 1997; Roorda et al., 2011). Extensive reading increases confidence that the topic is thoroughly covered and conclusions are credible (Vogt et al., 2012). A reflexive approach was used throughout the study to remain open to other ideas and maintain an awareness of the effects of personal epistemological, cultural, and experiential points of view.

A second area subject to potential bias was recruitment strategies. Choosing participants opens a researcher up to influences of bias. In this study, all Maine teachers who were in the evaluation cycle during the 2017-18 school year in a large district were invited to participate. Two teachers at each of the levels of elementary, middle, and high school volunteered. This minimized any potential bias in choosing participants, as much as possible with this sampling technique.

Finally, a researcher must approach qualitative research with an axiological assumption that recognizes the role of values. Attempts to avoid bias in interpreting data include acknowledgement of the value loaded nature of the topic, and balanced interpretation (Creswell, 2013). Semi-structured interviews will be one way to avoid personal or inherent bias. Glesne (2011) described how a researcher’s familiarity with a field or topic can cause him/her to interpret data to support a pre-determined hypothesis and blindness to data that are not consistent
with the researcher’s views or values. By continually focusing on structured coding processes, I attempted to minimize bias. The reflexive approach supported these efforts. Finally, feedback from my Dissertation Committee has helped me to confront my biases.

**Validity and Reliability**

Creswell (2013) explained that there are many approaches to validity and reliability in qualitative research. Validity and reliability are terms that are used in quantitative research more often than the qualitative counterparts of trustworthiness and dependability, but still bear discussion in mixed methods research, so I have chosen to use these terms as viable descriptors. Coding choices are critical in insuring that data are reliable and valid in representing the researcher’s conceptual framework and research questions (Vogt et al., 2012). In general, two checklists were used to guide the examination of validity and reliability: Creswell’s procedures (as cited in Glesne, 2011, p. 49), and Vogt, et al.’s (2012) checklist of procedures to achieve validity and reliability (p. 330). In addition, quantitative tools were subjected to statistical analyses of reliability (Gay et al., 2011).

**Validity**

According to Creswell (2012), “Validity is the degree to which all the evidence points to the intended interpretation of test scores for the proposed purpose” (p. 159). Issues of validity must be dealt with in every facet of research from design, to sampling, to concept formation, to data analysis. The following types of validity have been addressed in this study: internal validity, external validity, and construct validity. Internal validity is a concept that applies to the appropriateness and relevance of the design and the extent to which the evidence informs the research questions (Vogt et al., 2012). In order to control for this, a number of measures were employed. The design itself was modeled after the predominant research designs utilized in
mixed methods research (Creswell, 2012; Creswell, 2013; Creswell & Plano-Clark, 2011; Gay et al., 2011; Glesne, 2011; Maxwell, 2013; Miles et al., 2014; Seidman, 2013; Vogt et al., 2012). The instruments were aligned to the research questions as indicated in the “Instruments” and “Design” sections in Chapter 3. Finally, reactivity of teachers was avoided by conducting observations/videotaping before revealing that NVC behaviors were being observed (Maxwell, 2013).

Gay et al. (2011) reflected upon factors that threaten the validity of surveys. They cited examples such as; confusing test items, difficult vocabulary, complex sentences, and ambiguous language. Using an instrument designed specifically for K-12 students, with versions adapted for grade level groupings, and subjected to reliability analysis helps to minimize these threats. Many of the threats to internal, external, and construct validity mentioned by Creswell (2012) apply to longitudinal research so are not relevant for this study.

External validity “refers to the degree to which the results drawn from a sample can accurately be generalized beyond the respondents to the population at large” (Vogt et al., 2012, p. 122). Creswell (2012) cited three threats described by Cook and Campbell: the interactions of selection and treatment, setting and treatment, and history and treatment. These threats can apply to quantitative and qualitative data. To counteract threats related to selection, purposeful sampling was used based upon volunteers in chosen categories. Additionally, multiple measures were employed in collecting data through interviews, classroom observations, videotapes, and student rapport surveys, enabling triangulation of data (Maxwell, 2013). Finally, any conclusions drawn about a sociological phenomenon, such as the behaviors of teachers in a modern context or interpretations of classroom environments, are influenced by the historical
context. Consequently, this study avoids attempts to generalize beyond this district in the early 21\textsuperscript{st} century.

Construct validity is related to internal validity but is more focused on the gathering and coding of data and whether the data are accurate measures of the researcher’s constructs. A number of strategies address construct validity in this study. In addition to research questions being aligned to instrumentation and design, protocol codes chosen were rooted in NVC research (Zoller, 2007). Operational definitions were designated. Constructs and themes developed by the researcher were aligned to the research questions and the conceptual framework. Finally, an examination of response processes can provide evidence of construct validity. In addition to being drawn from validated instruments in the literature (Worley et al., 2007), the Interview Protocols were reviewed by the researcher’s Dissertation Committee to solicit suggestions for adaptations and clarity.

**Reliability**

In simple terms, reliability means consistency and dependability (Miles et al., 2014). Gay et al., (2011) asserted that the conditions of observations should be standardized so that there is as little variation as possible. The time of day, day of the week, and time of school year are important to keep constant. My schedule included eight full days on site in the district. I mixed interviews and videotaping on most days. Seven of the eight days were on a Wednesday to avoid beginning and end of the week factors. Other applications of this to qualitative research include consistency between research questions and methodology, consistency of findings across contexts, presence of data quality checks, and peer review (Miles et al., 2014). Reliability was measured using Cronbach’s Alpha and Pearson $r$ for quantitative data. All of these points are addressed in this study.
Inevitably, the worldview of the researcher, including the epistemological and ontological position of critical realism, affects both the validity and reliability of the study. Using a reflexive approach throughout helped to support a level of awareness of how these personal points of view, values, and philosophies can affect all areas of research from research design to interviews, to data interpretation. A researcher cannot remove these factors, but can maintain an awareness of them and acknowledge that challenges to the study are part of the process of discovery.
CHAPTER 4

FINDINGS

The purpose was to determine teachers’ awareness of their NVC skills and whether awareness correlated with teacher NVC behaviors and student perceptions of rapport. White (2016) posited that NVC is not dependent upon awareness. Its powerful effects are realized whether individuals are conscious of their nonverbal behaviors or not. On the other hand, Zoller (2015) maintained that NVC must be deliberate and conscious in order to demonstrate Communicative Intelligence (CI). If so, one would expect that the more evidence that a teacher is conscious of their NVC, the greater would be the likelihood of high levels of NVC behaviors promoting rapport and higher ratings on the measure of student perceptions of rapport. This consciousness would promote greater communicative flexibility and authenticity and increase rapport. By examining these topics, this study sought to better understand the role of NVC in increasing rapport between teacher and students at the K-12 level. Informed by research in the fields of communication, psychology, anthropology, neuropsychology, and education, the study expands this field of research by extending it to K-12 classrooms and examining teachers’ consciousness of their competence with NVC skills.

This study was conducted between December 2017 and April, 2018 in a large district in Maine. Participants in the study included two teachers from each of three grade ranges: K-5, middle school, and high school. The two high school teachers taught all four high school grades. The two middle school teachers taught seventh grade and eighth grade, respectively. The K-5 teachers included one fourth grade and one fifth grade teacher. Although I planned to randomly choose from teacher volunteers, these six were the only teachers who volunteered. In total, 12 interviews were conducted, 24 hours of video were recorded, and six classrooms of student surveys were collected.
This chapter generally follows the research design mapping (See Figure 4.1) Another schema for this chapter is the research questions, which I will discuss in order. First, in order to answer research questions 1 and 2 (RQ 1. What NVC behaviors are used by K-12 teachers in a large district in Maine?), (RQ 2. How do teachers’ NVC skills correlate with measures of rapport from student surveys?), I explore the quantitative data and conduct descriptive and inferential statistical tests. Next, I describe the qualitative coding and explore the major themes that emerged. I move on to address RQ 3 (How do teachers’ awareness and knowledge of NVC correlate with their observed NVC behaviors and student perceptions of rapport?) by merging the data and analyzing both quantitative and qualitative data. Finally, to answer RQ 4 (What are teachers’ reactions to the congruence or lack of congruence between consciousness of their own NVC skills as indicated in the first interview and the data indicating their observed NVC skills?) I will compare the first and second interviews to determine teachers’ reactions to the initial data.

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Products</th>
<th>Procedures</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive statistics</td>
<td>Quan. Data Analysis</td>
<td>Coding for thematic analysis</td>
<td>Major themes</td>
</tr>
<tr>
<td>Inferential Statistics</td>
<td>Frequencies/Means</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Standard Dev.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>t-tests between grade levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pearson corr.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross-tabulate products of qual. and quant analyses</td>
<td>Merge Data</td>
<td>Matrices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Narrative of comparisons</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4.1. Findings Organized by Research Design
Since statistical analysis is extensive, a note about the organization of quantitative analysis will prove helpful. Each analysis is conducted with six steps. First, rapport survey scores are compared with rapport behaviors, credibility behaviors, and total behaviors. Then whole survey scores are compared with rapport behaviors, credibility behaviors, and total behaviors. Table 4.1 illustrates this sequence.

Table 4.1 Organization of statistical analyses

<table>
<thead>
<tr>
<th>Step</th>
<th>Factors Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rapport Behaviors and Rapport Survey Scores</td>
</tr>
<tr>
<td>2</td>
<td>Credibility Behaviors and Rapport Survey Scores</td>
</tr>
<tr>
<td>3</td>
<td>Total Behaviors and Rapport Survey Scores</td>
</tr>
<tr>
<td>4</td>
<td>Rapport Behaviors and Whole Survey Scores</td>
</tr>
<tr>
<td>5</td>
<td>Credibility Behaviors and Whole Survey Scores</td>
</tr>
<tr>
<td>6</td>
<td>Total Behaviors to Whole Survey Scores</td>
</tr>
</tbody>
</table>

The Correlation of Teachers’ Nonverbal Behaviors with Student Rapport

In order to answer RQ 1 (What NVC behaviors are used by K-12 teachers in a large district in Maine?), I first coded the videos to generate frequency scores for each nonverbal behavior pattern (Zoller, 2007). I broke each participant’s three hours of video into ten minute segments and numbered them 1 – 16. Using an online randomizer, I chose four ten-minute segments for each participant. Then, using Zoller’s (2007) list of behaviors, I watched each 10-minute segment five times, each time focusing on four or five behaviors. For each minute, teachers were coded one frequency point if the target behavior was observed. Therefore, the maximum total frequency score for each behavior was 40, consistent with the 40 minutes of
video analyzed for each teacher. Once I had completed coding, and using the research cited in Figure 3.3., I created two variables using SPSS: behavior patterns that promoted rapport, and behavior patterns that promoted credibility. The items chosen for rapport and credibility are displayed in Appendix D.

To begin exploration of the second research question (RQ 2. How do teachers’ NVC skills correlate with measures of rapport from student surveys?), descriptive statistics were computed for each form of the survey using SPSS. Means were computed for each teacher for the video coded variables of rapport, credibility, and total behaviors. Means were also computed for student measures of rapport and whole survey measures (see Table 4.2). To get the survey variables, I first determined the questions that related to teacher/student relationships and labeled those as rapport questions. The remaining questions were about teaching practices and were labeled credibility. Appendix E indicates which questions were in which category. As described in Chapter 3, reliability analyses were used to inform the choice of questions.

Scores were reverse coded for Mean Survey Scores so NVC behavior data would coordinate with the direction of video coding data. A new variable was created that was computed by subtracting the values from a constant that was one digit higher than the highest value on the scale.

\[
\begin{align*}
5 - 4 &= 1 \\
5 - 3 &= 2 \\
5 - 2 &= 3 \\
5 - 1 &= 4
\end{align*}
\]

Having completed these calculations, I was ready to address RQ 2 (How do teachers’ NVC skills correlate with measures of rapport from student surveys?)
Table 4.2 Table of means

<table>
<thead>
<tr>
<th>Participant</th>
<th>Mean Nonverbal Rapport Behaviors (Video Coding)</th>
<th>Mean Nonverbal Credibility Behaviors (Video Coding)</th>
<th>Mean Total NVC Behaviors (Video Coding)</th>
<th>Mean Rapport Survey Score Raw</th>
<th>Mean Rapport Survey Score Converted</th>
<th>Mean Whole Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25.2</td>
<td>15.11</td>
<td>18.71</td>
<td>1.12</td>
<td>3.88</td>
<td>3.29</td>
</tr>
<tr>
<td>2</td>
<td>34.8</td>
<td>10.22</td>
<td>20.43</td>
<td>1.62</td>
<td>3.38</td>
<td>2.72</td>
</tr>
<tr>
<td>3</td>
<td>27.4</td>
<td>14.11</td>
<td>18.86</td>
<td>1.52</td>
<td>3.48</td>
<td>3.24</td>
</tr>
<tr>
<td>4</td>
<td>31.8</td>
<td>14.33</td>
<td>20.57</td>
<td>1.17</td>
<td>3.83</td>
<td>3.41</td>
</tr>
<tr>
<td>5</td>
<td>20.8</td>
<td>11.77</td>
<td>17.79</td>
<td>1.32</td>
<td>3.68</td>
<td>3.48</td>
</tr>
<tr>
<td>6</td>
<td>22.6</td>
<td>18.55</td>
<td>18.79</td>
<td>1.34</td>
<td>3.66</td>
<td>2.91</td>
</tr>
</tbody>
</table>

Relationship between Rapport Behaviors and Rapport Survey Scores

A Pearson correlation coefficient was computed for the relationship between participants’ nonverbal rapport behaviors and rapport survey scores. A moderate correlation was determined \((r (4) = -.374, p >.05)\). This indicates a moderate negative linear relationship between the two variables, signifying that a teacher with a greater number of nonverbal behaviors promoting rapport will be perceived by students as less personally connected.

This finding is not consistent with the literature and provides a negative response to RQ 2 since the NVC rapport behaviors of teachers were negatively correlated to survey rapport ratings. As this was just one measure with isolated constructs (rapport behaviors and rapport survey questions), it was necessary to examine the relationships among other constructs to thoroughly answer RQ 2. The next relationships explored were between credibility behaviors and rapport survey scores.
Relationship between Credibility Behaviors and Rapport Survey Scores

A Pearson correlation coefficient was computed for the relationship between participants’ nonverbal credibility behaviors and rapport survey scores. A moderate correlation was determined \((r (4) = .465, p > .05)\). This indicates a moderate positive linear correlation between the two variables, signifying that a teacher with a greater number of nonverbal behaviors promoting credibility is somewhat more likely to be perceived by students as more personally connected as a teacher. This finding did not indicate a significant relationship. This helps to direct the analysis to examine all NV behaviors as implied in the question.

Relationship between Total NV Behaviors and Rapport Survey Scores

A Pearson correlation coefficient was computed for the relationship between participants’ total NV behaviors and rapport survey scores. A weak correlation was determined \((r (4) = -.177, p > .05)\). This indicates no significant linear correlation between the two variables, signifying that a teacher with a greater number of nonverbal behaviors is not more likely to be perceived by students as more personally connected as a teacher. With these results in mind, relationships between the whole survey results and both rapport and credibility behaviors were explored.

Relationship between Rapport Behaviors and Whole Survey Scores

A Pearson correlation coefficient was computed for the relationship between participants’ nonverbal rapport behaviors and whole survey scores. A very weak correlation was determined \((r (4) = -.142, p > .05)\). This indicates a weak negative linear correlation between the two variables, signifying that a teacher with a greater number of nonverbal behaviors promoting rapport is somewhat less likely to result in higher whole survey scores.
This finding supports the one previously discussed when rapport behaviors were correlated to rapport survey items. Using the whole survey does strengthen the scores, but they still remain negatively correlated and very weak. It is again notable that this is directly in opposition to most of the research on nonverbal behaviors’ effect on rapport. Later, we will see the effect of using grade specific data instead of aggregated data.

**Relationship between Credibility Behaviors and Whole Survey Scores**

Finally, a Pearson correlation coefficient was computed for the relationship between participants’ nonverbal credibility behaviors and whole survey scores. No correlation was determined \( r (4) = .021, p > .05 \). This indicates no linear correlation between the two variables, signifying that the number of nonverbal behaviors promoting credibility is not a predictor of whole survey scores.

**Relationship between Total NV Behaviors and Whole Survey Scores**

A Pearson correlation coefficient was computed for the relationship between participants’ total nonverbal behaviors and whole survey scores. A negative correlation was determined \( r (4) = -.394, p > .05 \). This indicates a moderate negative linear correlation between the two variables, signifying that an increase in a teacher’s nonverbal behaviors is not likely to result in an increase in the whole survey score.

In summary, there were no significant correlations found between rapport behaviors, credibility behaviors, or total NV behaviors and aggregate rapport survey scores (See Table 4.3). Furthermore, there were no significant correlations found between rapport behaviors, credibility behaviors, or total behaviors and whole survey scores. Hence, there is no evidence that if one factor increases, the other will also increase.
Table 4.3 Pearson Correlation Coefficients for aggregated data

<table>
<thead>
<tr>
<th>Factors</th>
<th>Pearson r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapport Behaviors and Rapport Survey Scores</td>
<td>-.374</td>
</tr>
<tr>
<td>Credibility Behaviors and Rapport Survey Scores</td>
<td>.465</td>
</tr>
<tr>
<td>Total Behaviors and Rapport Survey Scores</td>
<td>-.177</td>
</tr>
<tr>
<td>Rapport Behaviors and Whole Survey Scores</td>
<td>-.142</td>
</tr>
<tr>
<td>Credibility Behaviors and Whole Survey Scores</td>
<td>.021</td>
</tr>
<tr>
<td>Whole Behaviors and Whole Survey Scores</td>
<td>-.394</td>
</tr>
</tbody>
</table>

**Predicting Student Perceptions of Rapport**

Having established that there is no significant correlation between teacher NV behaviors and student perceptions of rapport as measured by survey scores using aggregated data, the next area to examine is predictive analysis. Linear regressions will yield predictive strength of NV behaviors in determining survey scores. One would expect that, since no significant correlations emerged, predictive strength would be weak.

**Predicting Survey Rapport Scores Based on Rapport Behaviors**

A simple linear regression was used to predict survey rapport scores based on NV rapport teacher behaviors. The regression equation was not significant (F (1, 4) = .652, p > .05) with an R² of .140. Hence, NV rapport teacher behaviors are not a significant predictor of survey rapport scores. This supports the finding above that there is no correlation between NV teacher rapport behaviors and rapport survey scores when using aggregated scores of all participants.
The table below illustrates the one-way ANOVA from the simple linear regression to predict survey rapport scores based on rapport behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the participants’ coded rapport behaviors, and the dependent variable is the survey rapport score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as R Square. In this case, R Square indicates that 14% of the variation of the rapport scores can be attributed to the rapport behaviors coded in the videos.

Table 4.4  ANOVA: Variance of rapport scores attributed to rapport behaviors

<table>
<thead>
<tr>
<th>F</th>
<th>df</th>
<th>R Square</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.652</td>
<td>5</td>
<td>.140</td>
<td>.465</td>
</tr>
</tbody>
</table>

**Predicting Survey Rapport Scores Based on Credibility Behaviors**

A simple linear regression was used to predict rapport survey scores based on NV credibility teacher behaviors. The regression equation was not significant (F (1, 4) = 1.101, p >.05) with an R^2 of .216. Hence, NV credibility teacher behaviors are not a significant predictor of survey rapport scores. Once again, this supports the finding above that there is no correlation between teacher credibility behaviors and rapport survey scores.

The table below illustrates the one-way ANOVA from the simple linear regression to predict survey rapport scores based on credibility behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the participants’ coded credibility behaviors,
and the dependent variable is the survey rapport score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as R Square. In this case, R Square indicates that 21.6% of the variation of the rapport scores can be attributed to the credibility behaviors coded in the videos.

Table 4.5  ANOVA: Variance of rapport scores attributed to credibility behaviors

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>df</th>
<th>R Square</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.101</td>
<td>5</td>
<td>.216</td>
<td>.353</td>
</tr>
</tbody>
</table>

**Predicting Survey Rapport Scores Based on Total NV Behaviors**

A simple linear regression was used to predict rapport survey scores based on total NV teacher behaviors. The regression equation was not significant (F (1, 4) = .130, p > .05) with an R\(^2\) of .031. Hence, NV total teacher behaviors are not a significant predictor of survey rapport scores.

The table below illustrates the one-way ANOVA from the simple linear regression to predict survey rapport scores based on total behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the participants’ coded behaviors, and the dependent variable is the survey rapport score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as R Square. In this case, R Square indicates that only 3.1% of the variation of the rapport scores can be attributed to the total behaviors coded in the videos.
Consistent with the sequence of analysis, the next step was to predict whole survey scores from rapport behaviors, credibility behaviors, and total NV behaviors.

**Predicting Whole Survey Scores Based upon Rapport Behaviors**

A simple linear regression was used to predict whole survey scores based on NV rapport teacher behaviors. The regression equation was not significant ($F(1, 4) = .833, p > .05$) with an $R^2$ of .172. Hence, NV rapport teacher behaviors are not a significant predictor of whole survey scores.

The table below illustrates the one-way ANOVA from the simple linear regression to predict whole survey scores based on rapport behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the participants’ coded rapport behaviors, and the dependent variable is the whole survey score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as $R$ Square. In this case, $R$ Square indicates that only 17.2% of the variation of the whole survey scores can be attributed to the rapport behaviors coded in the videos.

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>df</th>
<th>R Square</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.130</td>
<td>5</td>
<td>.031</td>
<td>.737</td>
</tr>
</tbody>
</table>

**Table 4.6 ANOVA: Variance of rapport scores attributed to total behaviors**
Table 4.7 ANOVA: Variance of whole survey scores attributed to rapport behaviors

<table>
<thead>
<tr>
<th>F</th>
<th>df</th>
<th>R Square</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.833</td>
<td>5</td>
<td>.172</td>
<td>.413</td>
</tr>
</tbody>
</table>

Predicting Whole Survey Scores Based on Credibility Behaviors

A simple linear regression was used to predict whole survey scores based on NV credibility teacher behaviors. The regression equation was not significant (F (1, 4) = .000, p > .05) with an $R^2$ of .000. Hence, NV credibility teacher behaviors are not a significant predictor of whole survey scores.

The table below illustrates the one-way ANOVA from the simple linear regression to predict whole survey scores based on credibility behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the participants’ coded credibility behaviors, and the dependent variable is the whole survey score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as $R^2$. In this case, $R^2$ indicates that 0% of the variation of the whole survey scores can be attributed to the credibility behaviors coded in the videos.

Table 4.8 ANOVA: Variance of whole survey scores attributed to credibility behaviors

<table>
<thead>
<tr>
<th>F</th>
<th>df</th>
<th>R Square</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.000</td>
<td>5</td>
<td>.000</td>
<td>.984</td>
</tr>
</tbody>
</table>
Predicting Whole Survey Scores Based on Total NV Behaviors

A simple linear regression was used to predict whole survey scores based on total teacher behaviors. The regression equation was not significant (F (1, 4) = .737, p > .05) with an R² of .155. In fact, this was almost equally as predictive as whole survey scores based on just rapport behaviors. NV total behaviors are not a significant predictor of whole survey scores.

The table below illustrates the one-way ANOVA from the simple linear regression to predict whole survey scores based on total behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the participants’ coded behaviors, and the dependent variable is the whole survey score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as R Square. In this case, R Square indicates that 15.5% of the variation of the whole survey scores can be attributed to the total behaviors coded in the videos.

Table 4.9 ANOVA: Variance of whole survey scores attributed to total behaviors

<table>
<thead>
<tr>
<th>F</th>
<th>df</th>
<th>R Square</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.737</td>
<td>5</td>
<td>.155</td>
<td>.653</td>
</tr>
</tbody>
</table>

Table 4.10 summarizes the results of the linear regression. Since the R Square, or the coefficient of determination indicates the proportion of variance of the dependent variable that is due to variation in the independent variable, the closer to the R Square is to 1, the stronger the prediction.
In summary, neither rapport behaviors, credibility behaviors, nor total NV behaviors was a significant predictor of rapport survey scores when using aggregated data. Furthermore, rapport behaviors, credibility behaviors, or total NV behaviors were not significant predictors of whole survey scores. The evidence indicates that, using all participants in the study and all forms of the survey, no correlations are present and no predictions can be made. This finding is consistent with the findings of a ninth grade study by Mottett et al. (2008). Their research concluded that, unlike the strong support in studies of college age students, NVC did not influence affective learning in ninth grade students.

Table 4.10 Summary of R Square results of linear regression analysis

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent Variable</th>
<th>R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapport Behaviors</td>
<td>Rapport Survey Scores</td>
<td>.140</td>
</tr>
<tr>
<td>Credibility Behaviors</td>
<td>Rapport Survey Scores</td>
<td>.216</td>
</tr>
<tr>
<td>Total Behaviors</td>
<td>Rapport Survey Scores</td>
<td>.031</td>
</tr>
<tr>
<td>Rapport Behaviors</td>
<td>Whole Survey Scores</td>
<td>.172</td>
</tr>
<tr>
<td>Credibility Behaviors</td>
<td>Whole Survey Scores</td>
<td>.000</td>
</tr>
<tr>
<td>Whole Behaviors</td>
<td>Whole Survey Scores</td>
<td>.155</td>
</tr>
</tbody>
</table>

**Analysis of Rapport by Grade Level Groupings**

When broken down by grade levels, the data could be more meaningful since each grade level had a different form of the survey. This does result in small N sizes since there were only two teachers at each grade level grouping. First, using SPSS, means were computed for all of the variables (rapport behaviors, credibility behaviors, total behaviors, rapport survey scores,
credibility survey scores, and whole survey scores) for each of the three grade levels. Then, the same statistical analyses done above were performed at the grade grouping level.

**Predicting Survey Rapport Scores from Rapport Behaviors by Grade Level**

A simple linear regression was used to predict survey rapport scores based on NV rapport teacher behaviors by grade level. The regression equation was not significant \((F (1,1) = 14.60, p >.05)\) with an \(R^2\) of .936. Hence, grade level NV rapport teacher behaviors are not a statistically significant predictor of grade level survey rapport scores.

The table below illustrates the one-way ANOVA from the simple linear regression to predict grade level survey rapport scores based on grade level rapport behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the grade level participants’ coded rapport behaviors, and the dependent variable is the grade level survey rapport score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as R Square. In this case, R Square indicates that 93.6% of the variation of the grade level rapport scores can be attributed to the grade level rapport behaviors coded in the videos.

Table 4.11 ANOVA: Variance of rapport scores attributed to rapport behaviors by grade

<table>
<thead>
<tr>
<th>F</th>
<th>df</th>
<th>R Square</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.60</td>
<td>5</td>
<td>.936</td>
<td>.163</td>
</tr>
</tbody>
</table>
Predicting Survey Rapport Scores from Credibility Behaviors by Grade Level

A simple linear regression was used to predict grade level rapport survey scores based on grade level NV credibility teacher behaviors. The regression equation was not significant ($F(1, 1) = .575, p > .05$) with an $R^2$ of .365. Hence, grade level NV credibility teacher behaviors are not a significant predictor of grade level survey rapport scores. It is notable that this regression was much weaker than the prediction of grade level rapport survey scores from grade level rapport behaviors, which is not consistent with the results when aggregated scores were used.

The table below illustrates the one-way ANOVA from the simple linear regression to predict grade level survey rapport scores based on grade level credibility behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the grade level participants’ coded credibility behaviors, and the dependent variable is the grade level survey rapport score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as $R^2$. In this case, $R^2$ indicates that 36.5% of the variation of the grade level rapport scores can be attributed to the grade level credibility behaviors coded in the videos.

Table 4.12 ANOVA: Variance of rapport scores attributed to credibility behaviors by grade level

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>df</th>
<th>R Square</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.575</td>
<td>5</td>
<td>.365</td>
<td>.587</td>
</tr>
</tbody>
</table>
Predicting Survey Rapport Scores from Total Behaviors by Grade Level

A simple linear regression was used to predict whole grade level survey scores based on grade level NV rapport teacher behaviors. The regression equation was almost significant (F (1, 1) = 30.440, p > .05) with an R^2 of .968. Hence, NV total teacher behaviors are not a significant predictor of survey rapport scores, but are a better predictor than aggregated total teacher behaviors are of aggregated survey rapport scores.

The table below illustrates the one-way ANOVA from the simple linear regression to predict grade level survey rapport scores based on grade level total behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the grade level participants’ total coded behaviors, and the dependent variable is the grade level survey rapport score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as R Square. In this case, R Square indicates that 96.8% of the variation of the grade level rapport scores can be attributed to the total grade level behaviors coded in the videos.

Table 4.13 ANOVA: Variance of rapport scores attributed to total behaviors by grade level

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>df</td>
<td>R Square</td>
<td></td>
</tr>
<tr>
<td>30.44</td>
<td>5</td>
<td>.968</td>
<td>.114</td>
</tr>
</tbody>
</table>
Predicting Whole Survey Scores from Rapport Behaviors by Grade Level

A simple linear regression was used to predict whole grade level survey scores based on grade level NV rapport teacher behaviors. The regression equation was almost significant \( F (1, 1) = 50.704, p > .05 \) with an \( R^2 \) of .981. Thus, using the same form of the survey, a participants’ whole grade level survey score can be predicted by rapport behaviors with over 90% accuracy.

The table below illustrates the one-way ANOVA from the simple linear regression to predict grade level whole survey scores based on grade level rapport behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the grade level participants’ coded rapport behaviors, and the dependent variable is the grade level whole survey score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as R Square. In this case, R Square indicates that 98.1% of the variation of the grade level whole survey scores can be attributed to the grade level rapport behaviors coded in the videos.

Table 4.14 ANOVA: Variance of whole survey scores attributed to rapport behaviors by grade level

<table>
<thead>
<tr>
<th>F</th>
<th>df</th>
<th>R Square</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>50.704</td>
<td>5</td>
<td>.981</td>
<td>.089</td>
</tr>
</tbody>
</table>
Predicting Whole Survey Scores from Credibility Behaviors by Grade Level

A simple linear regression was used to predict whole grade level survey scores based on grade level NV credibility teacher behaviors. The regression equation was not significant (F (1, 1) = .347, p > .05) with an $R^2$ of .258. Hence, grade level NV credibility teacher behaviors are not good predictors of whole survey scores.

The table below illustrates the one-way ANOVA from the simple linear regression to predict grade level whole survey scores based on grade level credibility behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the grade level participants’ credibility coded behaviors, and the dependent variable is the grade level whole survey score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as R Square. In this case, R Square indicates that 25.8% of the variation of the grade level whole survey scores can be attributed to the grade level credibility behaviors coded in the videos.

Table 4.15 ANOVA: Variance of whole survey scores attributed to credibility behaviors by grade level

<table>
<thead>
<tr>
<th>F</th>
<th>df</th>
<th>R Square</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.347</td>
<td>5</td>
<td>.258</td>
<td>.661</td>
</tr>
</tbody>
</table>
Predicting Whole Survey Scores from Total Behaviors by Grade Level

Finally, a simple linear regression was used to predict whole grade level survey scores based on grade level NV total teacher behaviors. The regression equation was not significant (F (1, 1) = 3.23, p >.05) with an R² of .764. Hence, grade level NV total teacher behaviors are moderately good but not significant predictors of whole survey scores.

The table below illustrates the one-way ANOVA from the simple linear regression to predict grade level whole survey scores based on grade level total behaviors coded from videos. A one-way ANOVA is a comparison of the means of two or more groups that have a single independent variable. In this case, the independent variable is the grade level participants’ total coded behaviors, and the dependent variable is the grade level whole survey score. An Analysis of Variance (ANOVA) tells us the proportion of variance in the dependent variable that can be attributed to the independent variable signified as R Square. In this case, R Square indicates that 76.4% of the variation of the grade level whole survey scores can be attributed to the grade level total behaviors coded in the videos.

Table 4.16 ANOVA: Variance of whole survey scores attributed to total nonverbal behaviors by grade level

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>df</td>
<td>R Square</td>
<td>Sig.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>3.23</td>
<td>5</td>
<td>.764</td>
<td>.323</td>
<td></td>
</tr>
</tbody>
</table>

In summary, linear regression and multiple linear regression with grade level data revealed stronger predictors of survey scores than any aggregated data as demonstrated by Table 4.17. The fact that rapport behaviors are the best predictors of whole survey scores at grade level
is reflective of the literature in which the majority of studies, particularly foundational ones (Andersen, 1980; McCroskey et al., 1995), used a whole survey score to measure relationships between NV behavior and immediacy. Across the board, grade level rapport behaviors are a stronger predictor of grade level survey scores as compared to aggregate scores.

Table 4.17 Comparison of aggregate and grade level analyses

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent Variable</th>
<th>Significance level by Aggregate</th>
<th>Significance level by Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapport NV Behaviors</td>
<td>Rapport Survey Scores</td>
<td>.465</td>
<td>.163</td>
</tr>
<tr>
<td>Credibility NV Behaviors</td>
<td>Rapport Survey Scores</td>
<td>.353</td>
<td>.587</td>
</tr>
<tr>
<td>Total NV Behaviors</td>
<td>Rapport Survey Scores</td>
<td>.737</td>
<td>.114</td>
</tr>
<tr>
<td>Rapport NV Behaviors</td>
<td>Whole Survey Scores</td>
<td>.413</td>
<td>.089</td>
</tr>
<tr>
<td>Credibility NV Behaviors</td>
<td>Whole Survey Scores</td>
<td>.984</td>
<td>.661</td>
</tr>
<tr>
<td>Total NV Behaviors</td>
<td>Whole Survey Scores</td>
<td>.439</td>
<td>.323</td>
</tr>
</tbody>
</table>

**Teachers’ Values: Respect, Communication, Connection, and Relationships**

The qualitative measures in this study allowed an analysis of the individuals’ sense-making and understanding of nonverbal behaviors to complement the quantitative data (Maxwell, 2013; Worley et al., 2007). The qualitative methods included the collection and interpretation of narrative data through coding and thematic analysis of interview transcripts (Gay et al., 2011). Data in this section are based on twelve interviews, but it is important to note that one initial interview was lost due to the simultaneous malfunction of two recorders. An additional follow-up interview was conducted in its place. Hence, participant # 1 has fewer comments included in these themes. For each participant, one interview was conducted near the beginning of the data collection cycle, and one was conducted near the end of the data collection cycle. I shared preliminary data about each participant’s nonverbal behaviors at the beginning of the second interview. Provisional coding revealed five strong themes based on frequency:
respect, communication, connection, relationships and nonverbal skills (eye contact, body language, and voice).

The themes of respect, communication, connection, and relationships indicate the primacy of rapport for teachers. Since the questions asked about communication, it was expected that this theme would be prominent. The themes of respect, connection, and relationships, though, were teacher initiated, indicating common values among the participants.

“Relationships” was one of the initial Provisional Codes outlined in Figure 3.2. The other four themes emerged as sub-codes of the Provisional Codes of caring, engagement, and immediacy, respectively. In each of these themes, five out of six of the participants referred to these terms.

**Respect**

Participants referred to respect frequently. Vogt (2002) found that caring teachers understood that trust and respect were integral parts of the relationship between teachers and students. One participant encapsulated this value saying, “I always will support somebody who's talking, showing that I'm respecting them and then that becomes the baseline of the class and this is the way we do things here.” Respect is also included in Zoller’s (2007) NV coding structure. High respect is demonstrated by a still body and direct eye contact. Respect is included in all three surveys, in multiple questions in high school and middle school and in one question on the Grade 3 – 5 survey. Participants demonstrated an understanding that respect toward students preserves their dignity. “You are more effective to get right in their ear and say something quietly to them instead of letting them have it.”

There was an emphasis on mutual respect, as well. Participants talked about the reciprocal nature of respect as supported by Tickle-Dengen and Rosenthal (1990) in their study on the relationship between rapport and NVC. Boykin and Noguera (2011) and Skinner and
Belmont (1993) reinforced the idea that student engagement is promoted by a reciprocal relationship. Participants clearly understood that respect was a two-way process. “…mutual respect …I try to make sure that's communicated to them.” Another participant commented, “Everybody can have a voice and everybody can feel respected.” The concept of respect was differentiated from a natural liking and linked to appreciation of different personalities.

Yes, they probably are not going to be friends with them outside of here necessarily, but that mutual respect is like I try to make sure that's communicated to them where you have to learn to figure out different moves of big personalities in here. Another participant acknowledged that respect can be maintained even in difficult situations. “…how are we going to manage ourselves in here so that everybody can have a voice and everybody can feel respected and how are you going to handle yourself when somebody says something that makes you angry?”

Participants tried to model respect for students. Donaldson (2006) emphasized the importance of modeling for students. Doyle and Doyle (2003) talk about modeling in the context of caring, but this principle could be more broadly established to apply to respect as well. The theme of respect was a sub-code under the Provisional Code of caring, supporting this generalization. One participant commented. “They all know that when that person's talking, they're the most important person in the room, not me.” Finally, one participant mentioned the importance of respect in reflecting on the qualities of a favorite teacher. “If there was a child having a problem, we always saw that she treated them respectfully.” This illustrates the importance of modeling in shaping the practices of teachers.

Participants acknowledged that NVC was of primary importance in building mutual respect. One participant shared,
I don't talk a lot, I don't think I ever say, "I want you to respect me." I don't use those words because I want to model that first and I always will support somebody who's talking, showing that I'm respecting them and then that becomes the baseline of the class and this is the way we do things here.

Other participants identified specific NVC skills they used to convey respect. One participant said,

Last year I did high five with my students. They are all unique high five. I'm standing there in the morning but put them so everybody feels respected and feels more wanted in this classroom.

Yet, despite the emphasis on respect, most participants did not understand the connection between NVC and respect. In the second interview one teacher said, “Because several of these are new to me, I don’t know if I have my head around a proper reaction. In fact, I didn’t ask about 13 but what does high respect mean?” When I explained the NV behaviors that indicated high respect, participants were surprised and many indicated that they were not aware of this connection. One participant shared that other teachers ask her how she manages her class so well and there are so few behavior problems. She answered, “It's just because I treat them respectfully and I can tell them what my expectations are and I think that I can reach them.”

Some participants connected respect to credibility and talked about students having respect for them. One middle school participant said, “I think part of it is also to have a classroom presence so the kids know that you mean business and you gather their respect.”

Although participants voiced a desire to be respected and to respect students, they didn’t always feel successful. One participant struggled with this.
I try to speak to them respectfully and say please. I ask them calmly to sit down or put their stuff away or whatever, even the kids that say, "I don’t want to talk to you.” I have parents email me accusing me of things that are just not true. It’s hard to think that you’re treating kids respectfully and trying to speak in that way.

**Communication**

A second major theme discussed by teachers was communication. Communication emerged as a sub-code under the Provisional Code of engagement. All but one participant identified communication as integral to building relationships with students. McCroskey et al. (1995) confirmed a high correlation between communication and positive student evaluations. In early work on NVC, Andersen (1980) determined that communication predicted 46% of variance in affect toward the teacher. According to one participant, “I just think communication is one of the biggest things as part of teaching.” One participant recalled having a book study on the topic of communication. This theme was the only one that was discussed equally in both the first and second interviews. This is not surprising since communication is the subject of this study and the interview protocols focused heavily on this topic. In this section, I focus on communication in general, as a discussion of NVC comes later.

White (2016) cited communication as the primary contributor to both affective and cognitive outcomes for students. This was reinforced by other researchers (Kuck, 2000; Peterson & Deal, 1998; Riehl, 2000; Skow & Whitaker, 1996). Participants understood the importance of this skill. “Communication is key, that is one of the biggest parts of having an engaged classroom and getting things accomplished.”

Communication demonstrates caring. Rapport is created through communication (Nowak-Fabrykowski, 2012; Singh, 2013; Teven, 2001; Zoller, 2010). Mehrabian (1971) found
that communication increases psychological closeness, so its effects are affective. As one participant put it, “Being able to engage with them or having somebody to say thank you or that kind of stuff is always important to what you do.” Argyle (1975) defined communication as “reducing the distance or improving the visibility” between people (p. 277). Participants expressed the awareness that relationship were key to communication. One participant said, “You can talk to kids and they can talk to you, but you have to build a relationship with them and that's the biggest piece - the very biggest piece.” Another shared,

Competent communication also has attitudinal components to it of friendliness and more of all of those things. I mean at its essence, was it received and taken into the life of that other person? Which is really why we choose the literature with it that we choose, that it has things worthy of communication and it's my job just to be the conveyor of that.

In their theory of Implicit Communication, Butland and Beebe (1992) explained that implicit communication expresses emotion. Finally, teacher behaviors related to communication have been established as contributors to a caring classroom by a number of researchers (Cooper, 2004; Finn et al., 2009; Morganett, 1991; Nowak-Fabyrowski, 2012; Teven, 2001; Vogt, 2002). Participants supported the connection between communication and caring with their comments. One participant said,

I always try to remember, and it's hard sometimes, but that each exchange we have with the student, each bit of communication can make, or break the rest of that person’s day, or that person’s class, and that sort of thing.

Communication covers a myriad of contexts. Communication can be verbal or non-verbal and used in many settings and with many skills. One participant addressed communications that did not have the benefit of NVC behaviors, saying,
I think that it's too easy you send an email so that communications are hasty and not well thought through. If I decide I want to send an email and it's a sensitive issue, I always have somebody read it for tone just because I've seen it go wrong so often. I will hand one to a colleague and say, "What you get from this?"

Another participant discussed the many facets of communication in the following comment: “There's lots to just the communication piece, which is listening, speaking, reading other people, reading the kids, um, and being able to communicate with them.” It is the teacher’s communication competence that sets the tone in the classroom. Participants demonstrated through their comments that they make a conscious effort to practice this skill. They realized the interplay between verbal and nonverbal communication. An elementary school participant said, The way you ask a question will hopefully build a verbal communication. I really still think it's important to-- And if you see somebody wave, nod your head, you don't have to necessarily say hello but eye contact, little things like that so they know at least you acknowledge them.

Communication is reciprocal. Birdwhistell (1970) described communication as being evidenced by a dynamic relationship between parties. Zoller’s (2010) concept of mirroring supports this reciprocal relationship, further supported by Johnson and Reed (2012). Participants understood that both students and teachers had to communicate to create a strong bond. They knew that they had to share something of themselves to open the lines of communication. For example, an elementary participant shared, The communication is key, that is one of the biggest parts of having an engaged classroom and getting things accomplished and if you don't have that and if they don't feel comfortable, then they're not going to want to write a paper or, "Who are you?" to
them? If you can kind of have them learn about you, you learn about them and build that.

I think it's really important.

Another participant said, “We are all a part of the same communication group. I'm just one voice in here. I'm not the only voice. That's why we sit this way.”

Once again, participants were not confident that they were communicating as well as they could. One participant, in reaction to the data presented before the second interview said, “It confirms, I always thought that I did okay with the students communicating but just for me, the majority of these scores show me that I'm probably doing a little bit better than I thought I was doing.” Another talked about how communication is different with each group of students.

The current seniors would have been my other class, totally different. They just were not receptive, they did not seem to care what we did outside of school. They didn't want to share things with me. Depending on the kids that you have, that dictates what your communication is going to be like with them.

A third participant shared that knowing more about NVC could be valuable.

Yes, it gives the language to the whole concept of nonverbal communication and how that leads to reporting needs to comfort zone with the students feeling like I know what I'm doing that can't be a bad thing that can only help.

Another participant expressed the value of identifying NVC skills,

I'm always interested in research and I think it's interesting that there's no mysticism about nonverbal communication. It's correlated with data and we can see, "Here is my list of things and I'm going to practice doing more of this. I know where I can do better
because there it is, right there." I think that to let them know that this is a skill, it's not just an inherent quality.

It is important to note here the identification of NVC as a skill. It has the core components of a skill since it can be described, demonstrated in a concrete manner, broken down into steps, practiced, and mastered. Rapport, on the other hand, is a quality of relationship rather than a set of behaviors (Zoller, 2015).

**Connection**

The third major theme to emerge was connection. Connection transpired as a sub-code of immediacy. Five out of six participants mentioned connection as something essential to effective teaching. One participant shared this belief in her personal definition of communication. “I would say the ability to connect with the kids and to get your message across and try to understand what they're saying and how that's impacting on their learning.” Emotional connection is developed through communication (Teven & Hanson, 2004). Definitions of caring communities emphasize connection (Chaskin & Rauner, 1995). On participant put it this way: “I would say (one of the most important things is) the ability to connect with the kids and to get your message across and try to understand what they're saying and how that's impacting on their learning.” Another participant remarked, “If you're not connected to them, it's all well and good to say the teacher doesn't matter.”

Connection relates to engagement. It exists alongside positive attitudes and interest to make up affective engagement (Boykin & Noguera, 2011). As voiced by one participant,

If I am communicating effectively with students, then they're understanding not just the meaning of the materials that we have in front of us but, also, they've integrated a
relevance to themselves that communication is not just the saying of the words but it is finding a way to make the connection.

Participants expressed that having a connection with students drives their engagement and willingness to put in effort. One participant commented, “If they feel like you're in their corner, they'll do almost anything for you.” Connection also makes communication effective. Emotional connection is developed through communication (Teven & Hanson, 2004). A participant voiced this succinctly in saying, “Communication is not just the saying of the words but it is finding a way to make the connection.” The importance of connection as a foundation for engagement was stressed by one participant.

They even stay connected with me for years. So, I think that's the biggest part, it's just the relationships. If you can't build a relationship with them then they may or may not tune in to everything else that you say.

Participants shared that maintaining a connection takes effort on a daily basis. It must be purposeful. One participant talked about having difficulty connecting with some students, saying,

You can tell the ones that don't like to necessarily, but at least come up to me later, or there might be another teacher in the building, hope they can find that because sometimes, they don't connect at all. Much as you want to, there are just some personality differences.

Building practices that promote connection helps to ensure that connection remains prominent. In discussing Morning Meeting, one participant shared, “But the very first thing we do when they come back is have the morning meeting before they have their morning with me.” Participants were purposeful about trying to make connections that did not occur naturally. Said one participant,
At the beginning of the year, I always try to find that kid that I know but don't connect with right away. That's my goal. Usually, one or two are okay. I want you to not like me, but I want you to want to work for me and I want you to feel successful. I want them to feel like this is a comfortable place and a good learning environment.

Another participant talked about a school-wide effort to form connections with students.

In the past few years, my principal and school, we were trying to make connections and you may have seen me try to do that a little bit with the kids to give them an opportunity to share what's going on to their life and to make those connections with the kids to try to open that path to find somebody that cares about them and all that.

Finally, more effort is required when connecting with larger groups. One participant brought this out in her comment comparing large to small groups.

You have that personal connection which you can have with a smaller group. If you don’t have smaller group, you have to find ways to get to them anyway. Like say you hear a book talked about and you say to a student, "You know, I heard about this or I saw this news story and I thought of you." That is also that personal connection that, "You know me."

Relationships

The final major theme to be discussed before examining the theme of NVC more thoroughly is the theme of relationships. Participants had a lot to say about the primacy of relationships. One participant stated,

It's important to know the curriculum. It's important to know all of that but to be able to communicate with the children and to have that relationship, it's key. It's not like giving
children hug every morning. It's just the looking at them knowing that they're here and knowing that they're listening, it's just as important as teaching them— the math standard.

White (2016) noted the importance of relationships for teaching effectiveness. Nussbaum (1992) found that NVC’s effect on relationships was one of the factors most supported by research on teacher effectiveness. Participants agreed that building relationships was essential to teaching.

Just being able to talk to them and already build that relationship by knowing what they like, what they don't like, how they learn. I think the first couple of months is just important to really build that relationship. That's one thing I've always just was able to do right out of school.

In a study of primary teachers, Vogt (2002) found that relationships were prominent in both male’s and female’s self-image as teachers. Relationship is one of three factors in Self Determination Theory, and as such, affects motivation (Ryan & Deci, 2000).

Relationships are reciprocal. Zoller (2010) writes extensively about mirroring that involves the recipient adopting the breathing, pace, and tone of the speaker. This was addressed by Noddings’ idea of motivational displacement, when the hearer mirrors the feelings of the speaker (Johnson & Reed, 2012). Wubbels and Brekelmans (2005) determined that NVC has a significant effect on relationships. A number of participants talked about the importance of getting to know the interests of their students, indicating the relationship as a two-way street. One said, “I think you do have to develop some relationships and be able to talk about things that they're interested with.” Another participant commented, “…just being able to talk to them and already build that relationship by knowing what they like, what they don't like, how they learn.” Finally, a middle school teacher shared, “I want to get to know my kids a little bit. I want them to get to know me a little bit outside of the teacher-student.” Another comment identified that NV
communication from students is a part of shared communication. “Anybody who's looked out at a class of kids who are clearly communicating a certain message, you know there's nonverbal communication.”

Relationships in K-12 may affect students more than in college and adulthood. Macsuga-Gage et al. (2012) found that in K-12 schools relationship-building through positive communication with the family and the student was essential. According to Basworth (1995) middle school students identify relationships as one of five things that define caring. In a study of at-risk children, Roorda et al. (2011) found a significant correlation between relationships and engagement. This correlation was strongest at the secondary school level. One high school participant demonstrated her understanding of this when saying, “You can say, "I can teach an auditorium filled with people," and you can, but not in the way high school students need to be taught, which is based on a relationship.”

Emphasizing the importance of relationships in high school, one participant said,

I do appreciate scholarships and academic skills, I truly do, but at this age, there has to be a relationship, and it's absolutely critical. I'm sure you know high school students who will fail a class because they think the teacher doesn't like them, or the relationship's not there. They do not see the absurdity of that and they would follow that all the way to the end. I think that having these relationships is critical, which is why class size matters.

Jensen (2013) emphasized the importance of relationships in the early grades and the effect on engagement. A primary school teacher agreed with that. “You have to build a relationship with them and that's the biggest piece - the very biggest piece.”
Again, despite the fact that relationship was a prominent theme for teachers, they expressed surprise at some of the NVC skills that supported relationship-building. In the second interview, one participant said,

We really need to relate to the kids because if we can't relate to them, we're not gonna get them to do the best that they can do. Part of motivating them obviously is everything you do, not just what I'm saying but everything that I'm actually doing. I guess it's more important looking at this than I thought.

**Trust**

The ability to receive NVC has been positively correlated with trust in both men and women (Sabatelli, Buck, & Dreyer, 1983). According to Tschammen-Moran and Hoy (2000), other characteristics associated with trust include confidence, benevolence, vulnerability, openness, and honesty. Despite the closeness of these terms to the themes identified with these participants, there was only one mention of trust in initial and follow-up interviews.

And we do a lot of little activities the first two weeks of school, um, to build those...to build those relationships. So, we trust each other and we know what the expectations are with each other as well as with me. And then...and I think that works.

Trust is a key characteristic of well-functioning organizations (Tschannen-Moran & Hoy, 2000). As students are at the bottom of the social hierarchy in schools, high levels of trust in the upper levels, such as between teachers and principals, leads to confidence in accuracy, and a desire for and satisfaction with interactions. These affect school climate so, in a sense, trickle down to student teacher interactions (Danielson, 1996; Tschannen-Moran & Hoy, 2000). Some participants referred to trust and vulnerability obliquely. One participant implied that communication was difficult when trust was not present.
The current seniors would have been my other class, totally different. They just were not receptive, they did not seem to care what we did outside of school. They didn't want to share things with me. Depending on the kids that you have, that dictates what your communication is going to be like with them.

There were other indirect references to trust. One participant discussed the importance of trust indirectly in saying, “If they feel like you're in their corner, they'll do almost anything for you.” Another circuitous reference to trust was in a participant’s sharing of a school-wide effort.

In the past few years, my principal and school, we were trying to make connections and you may have seen me try to do that a little bit with the kids to give them an opportunity to share what's going on to their life and to make those connections with the kids to try to open that path to find somebody that cares about them and all that.

Interviews did not yield one reference to vulnerability, yet, relationship involves vulnerability. Noddings’ (2005) ethic of care is based upon relationships. This requires that teachers will want to know about the personal lives of their students and that they will want to share appropriate personal information about themselves. In a poignant interaction with one participant, she shared, “I co-advice the home room. I’m really struggling because I feel like a lot of the kids don’t like me.” Teachers need to be in positive relationships with their students, too.

Vulnerability applies to teachers and students. Another participant said, “So, in your waking hours are with this family rather than with your own family. So we're kind of like a family and we have to build that relationship with each other and feel comfortable and be able to take risks.”

The NVC skills that promote rapport physically signify vulnerability. The skills of gesturing toward someone, breathing low in a relaxed manner, standing still while listening or pausing with arms at one’s side all place the teacher in an open and vulnerable position. Our
bodies respond to threat with the opposite NVC; rapid and low breathing, turning away from the threat, and physically using our hands and arms to cover our bodies as a protection from harm (Argyle, 1975).

**Awareness of Nonverbal Skills**

Although the above mentioned themes were predominant in the first set of interviews, in the area of nonverbal skills the references were fairly equal when comparing the first (31) and second (37) interviews. Participants acknowledged the importance of NVC. A high school participant noted, “Some huge percentage of your communication is your nonverbal communication. I don't know if it's 90% as I think I've read. It's something very, very high but certainly it matters.” Two themes, both addressing functionality, emerged in analyzing the 12 interviews for references to NVC: communication and classroom management. Each of these is descriptive of the concept of NVC shared by these participants. In referring to Figure 3.3, the themes focused on parakinesis, but only in a narrow interpretation. Table 4.1 highlights the NVC skill references made by the participants more than once. This indicates an understanding and awareness of a fraction of the NVC skills that contribute to rapport.

Overall, the NVC skills identified by the participants covered primarily visual conveyance. NVC in a visual context has a demonstrated effect on effective communication (Birdwhistell, 1970; Bull 2012). Eye contact and facial expressions fall into this category. One participant related, “I try to use a lot of eye contact when I communicate.”

The use of auditory conveyance through paralinguistics was barely discussed and yet is strongly supported in the literature (Butland & Beebe, 1992; McCroskey et al., 2014). Zoller (2010), Pentland & Heibeck (2010), and Argyle (1975) identified voice fluctuation in volume, pitch, and tempo as contributors to affective learning. One high school participant identified voice as a
<table>
<thead>
<tr>
<th>Codes</th>
<th>Description</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 4, 10</td>
<td>Gestures (Parakinesics)</td>
<td>1. Self talk – gesture to self</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Teacher to student/class talk – gesture to student or class</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Teacher to object talk (concrete or abstract) – gesture to other than a person board/lab/book/location</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Teacher to outside the room – gesture outside room</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10. Frozen hand gesture, including beats</td>
</tr>
<tr>
<td>5-9</td>
<td>Voice (Paralanguage)</td>
<td>5. Voice pattern – flatter/less rhythmic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Voice pattern – rhythmic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Voice speed – increase from baseline</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. Voice speed – decrease from baseline</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9. Loud-silent-softly (relative to baseline)</td>
</tr>
<tr>
<td>11 – 14</td>
<td>Expectations &amp; Respect (Parakinesics)</td>
<td>11. High expectation: still body, direct eye contact when making point</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12. Low expectation: Moving body, indirect eye contact when making a point</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13. High respect: still body, direct eye contact when listening to student</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14. Low respect: moving body, indirect eye contact when listening to student</td>
</tr>
<tr>
<td>15-18</td>
<td>Pausing &amp; Breathing (Paralanguage)</td>
<td>15. When pausing, teacher is still</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16. When pausing, teacher is moving</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17. Breathing high in the chest</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18. Breathing low in the abdomen</td>
</tr>
<tr>
<td>19-22</td>
<td>Voice &amp; Breathing (Paralanguage)</td>
<td>19. Voice flat while breathing high</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20. Voice flat while breathing low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>21. Voice rhythmic while breathing high</td>
</tr>
<tr>
<td></td>
<td></td>
<td>22. Voice rhythmic, breathing low</td>
</tr>
</tbody>
</table>
prominent NVC skill, but was not specific about the elements of voice to which she was referring. This researcher’s interpretation was that this participant referred more to fluctuation than to volume. “Always choose to communicate by voice, if there is anything that is the slightest bit tender because still human to human contact is the best way to communicate.”

Within the theme of functionality, three sub-themes surfaced. Communication was the most prominent of these sub-themes, and included sensitivity to students’ feelings, multiple modes of communication, and alignment. Classroom management was another sub-theme, particularly at the middle school level. Finally, motivation materialized as a third sub-theme under functionality. Classroom teachers had specific uses for NVC in communicating with, managing, and motivating students. Table 4.19 summarizes the references to NVC made by participants in the first and second interviews.

Table 4.19 Participant references to nonverbal skills

<table>
<thead>
<tr>
<th>Part. #</th>
<th>First Interview</th>
<th>Second Interview</th>
</tr>
</thead>
</table>
| 1       | I try to use a lot of eye contact when I communicate,                           | Some of it is just how you act, it’s organic, different you are or whatnot.  
I would really push them toward understanding that eye contact is such a biggie. It really is, because you can make big strides for the student by sharing a joke, sharing a glance. |
| 2       | In teaching sometimes you try not to interrupt your class for the kids that are not misbehaving and so hope that I look or gesture or proximity, I do a lot with proximity and if I know I've got kids that are going to not interact well or not get busy, | You innately know what works with kids.                                                                 |
| 3       | Some huge percentage of your communication is your nonverbal communication. I don't know if it's 90% and as I think I've read. It's something very, very high but certainly it matters. Anybody who's looked out at a class of kids who are clearly communicating a certain message, you know there's nonverbal communication.  
Always choose to communicate by voice, if there is anything that is the slightest bit tender because still human to human contact is the best way to communicate.  
Well, you get the verbal tone of course, and you have body language and you have facial expression. | I'm always interested in research and I think it's interesting that there's no mysticism about nonverbal communication. It's correlated with data. |
Table 4.19 continued.

<table>
<thead>
<tr>
<th>Part. #</th>
<th>First Interview</th>
<th>Second Interview</th>
</tr>
</thead>
</table>
| 4       | …how to do research, how to read an e-mail and then how to respond back to that, 'cause you can't put as much...there's no facial expressions, non-verbal, other things that they can read...facial expressions or body language, so we talk about those types of things. You can say one thing but then your body language can say something else and kids are really good at reading body language and facial expressions so, a lot of people try to use those nice words but it's got to be the whole package, or they're not going to buy it.

"OK, let's put distractions away, bodies turned towards me, eyes on the person who's speaking.

…quick pat, or a smile, or a just a little look of encouragement.

So, it's just them participating, their eyes are on me, they seem less distracted with other things. |

Obvious, we think of our facial expressions as well and our body. How we move our body.

"How did you say that? What did your face looked like? What did your body looked like? What was you appearance to the kids?" Especially with a new-teacher, you're thinking about so many other things. |

5       | I think the non-verbal is best when it's a whole group setting. It's just painful for some kids to have to speak up in class, it really is, so you've got to put yourself in their shoes. |

You're doing them even though you are not thinking about doing them. |

6       | Body language is important. I try to walk around the classroom and get to everybody because even if I'm just standing at their table and not even saying anything, just my body language there just knowing that I'm there if they need help makes a big difference. |

Part of motivating them obviously is everything you do, not just what I'm saying but everything that I'm actually doing. |

Communication

Communication was the most robust theme and was frequently mentioned as a pragmatic approach to the use of NV skills to connect with students. Teachers’ attitudes toward NVC were focused upon the practical outcomes of positive communication, rather than rooted in extensive knowledge about NVC. This use of NVC to connect with students is relevant as a primary goal of this study was to determine a connection between NV communication and affective learning. Andersen (1980) concluded that communication predicted 46% of variance in affect toward teacher. Donaldson (2006) indicated that the connection between NVC and affect was equally
relevant for adult interaction. Most comments on communication identified parakinetics (eye contact and body language) as important in handling students’ social-emotional needs. Teven and Hanson (2004) provided evidence that communication was powerful in promoting an emotional connection. Mehrabian emphasized that his seminal research only identified the connection between NV skills related to feelings and attitudes (York, 2015). This is consistent with the Implicit Communication construct created by Butland and Beebe (1992). Participants at all three grade groupings discussed communication in this context. A high school participant said, “I would really push them toward understanding that eye contact is such a biggie. It really is, because you can make big strides for the student by sharing a joke, sharing a glance.”

A middle school participant emphasized proximity in conveying caring and availability.

Body language is important. I try to walk around the classroom and get to everybody because even if I’m just standing at their table and not even saying anything, just my body language there just knowing that I'm there if they need help makes a big difference.

An elementary participant noted, “…quick pat, or a smile, or a just a little look of encouragement…” Finally, another participant expressed empathy for the feelings of her students when commenting, “I think the non-verbal is best when it's a whole group setting. It's just painful for some kids to have to speak up in class, it really is, so you've got to put yourself in their shoes.”

NVC of content was addressed sparingly, although there is evidence that NV skills affect cognition. Pogue and Ahyun (2006) and White (2006) state that connecting emotionally with students has an indirect effect on cognitive outcomes. Hattie (2012) determined a strong relationship between student-teacher relationships and achievement, citing an effect size of .72. Others have determined that there is a relationship between NVC and cognition (Chaudry &

…how to do research, how to read an e-mail and then how to respond back to that, ’cause you can't put as much...there's no facial expressions, non-verbal, other things that they can read…facial expressions or body language, so we talk about those types of things.

Many researchers have failed to find evidence that communication skills directly affect cognitive outcomes (Andersen, 1980; Babad, Bernieri, & Rosenthal, 1987). Beebe (1992) found that NVC was related only to student perceptions of cognition. So, participants’ focus on NVC skills primarily as addressing affective learning is fairly consistent with the trends in literature, at least through the 20th century. With an increased focus on the importance of social-emotional learning, there is an opportunity for researchers to build up this line of research.

Another, less pervasive sub-theme in communication included alignment between verbal and nonverbal communication. Zoller (2015) includes alignment of verbal and NV skills in his definition of Communicative Intelligence. He specifically indicates that Communicative Intelligence is a conscious and intentional effort to achieve alignment between the intended message and the perception of that message. Just one participant indicated an awareness of this alignment.

You can say one thing but then your body language can say something else and kids are really good at reading body language and facial expressions so, a lot of people try to use those nice words but it's got to be the whole package, or they're not going to buy it.

**Classroom Management**

A second sub-theme regarding the function of NVC skills was classroom management. Morganett (1991) identified teacher-student relationships as an important factor in classroom
management. The use of gestures, proximity, and eye contact relating to NVC was noted by participants.

In teaching sometimes you try not to interrupt your class for the kids that are not misbehaving and so hope that a look or gesture or proximity, I do a lot with proximity if I know I've got kids that are going to not interact well or not get busy.

Participants used prompts about NVC to get students’ attention. “OK, let's put distractions away, bodies turned towards me, eyes on the person who's speaking. One participant even noted students’ NVC as an indication that they were attending. “So, it's just them participating, their eyes are on me, they seem less distracted with other things.”

**Motivation**

The use of NVC skills to influence motivation was another communication area that did not receive much recognition. Ryan and Deci (2000), define relatedness as feeling significantly emotionally connected to others through three basic human needs that affect psychological well-being and social development: competence, autonomy, and relatedness. This theory posits motivation as dependent upon these needs being met. The factors of competence, autonomy, and relationship dynamically interact to affect intrinsic motivation. Chesebro and McCroskey (2001) found strong correlations between NVC, motivation, and affective learning. Just one participant addressed the connection between motivation and NVC saying, “Part of motivating them obviously is everything you do, not just what I'm saying but everything that I'm actually doing.”
Correlation of Nonverbal Communication Skills with Field-Based Researcher’s Rankings and Awareness Rankings

The next phase of analysis purported to answer Research Question # 3.

RQ 3. How do teachers’ awareness and knowledge of NVC correlate with their observed NVC behaviors and student perceptions of rapport?

Table 4.20 Consolidated quantitative and qualitative data

<table>
<thead>
<tr>
<th>Participant</th>
<th>Mean Nonverbal Rapport Behaviors (Video Coding)</th>
<th>Mean Nonverbal Credibility Behaviors (Video Coding)</th>
<th>Mean Total NVC Behaviors (Video Coding)</th>
<th>Mean Rapport Survey Score Raw Converted</th>
<th>Mean Whole Survey</th>
<th>Initial Field-Based Ranking by Researcher</th>
<th>Ranking of Awareness</th>
<th>Frequency Negative NVC Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25.2</td>
<td>15.11</td>
<td>18.71</td>
<td>1.12</td>
<td>3.88</td>
<td>5</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>34.8</td>
<td>10.22</td>
<td>20.43</td>
<td>1.62</td>
<td>3.38</td>
<td>1</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>27.4</td>
<td>14.11</td>
<td>18.86</td>
<td>1.52</td>
<td>3.48</td>
<td>3</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>31.8</td>
<td>14.33</td>
<td>20.57</td>
<td>1.17</td>
<td>3.83</td>
<td>3</td>
<td>5</td>
<td>43</td>
</tr>
<tr>
<td>5</td>
<td>20.8</td>
<td>11.77</td>
<td>17.79</td>
<td>1.32</td>
<td>3.68</td>
<td>3.48</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td>22.6</td>
<td>18.55</td>
<td>18.79</td>
<td>1.34</td>
<td>3.66</td>
<td>2.91</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Here, data from both methodologies were merged in the analysis by cross-tabulating qualitative and quantitative data. The data of the observed behaviors and student perceptions of rapport as reported in the surveys was thoroughly analyzed in the previous section. The field-based researcher rankings were recorded after observing participants in their classrooms. After observing all six participants, I rated them from 1 – 6 based on my judgement of their ability to build rapport with students, 6 being the most skillful in building rapport. This was a pre-analytic ranking, as it occurred before I analyzed any data. The qualities I classified as indicative of this rapport-building ability were gestures (including smiling, patting on the shoulder, leaning in, and
eye contact) and vocal characteristics, such as expressive range, enthusiasm, and laughter). The participant’s level of energy also influenced my ranking. This rating was spontaneous, and I did not intend to use it as part of my analysis. As indicated in the Summary of Major Results in Chapter 5, I found it an interesting factor to consider.

Participants did exhibit some negative NV behaviors that would create a barrier for building rapport. These behaviors included: low expectation- moving body, indirect eye contact when making a point; when pausing, teacher is moving; breathing high in the chest, and; low respect - moving body, indirect eye contact when listening to student. Although no significant correlations were found, there were some striking differences among teachers.

Similar quantitative data for participants’ awareness was not available. This methodology for comparison necessitated a ranking, of participants’ awareness of NV behaviors. The awareness ranking resulted from a qualitative analysis of interview transcripts based upon the NVC behaviors referred to by the participant in the first interview and their reaction to learning about other NV behaviors in the second interview. Table 4.20 consolidates quantitative and qualitative data.

*Pearson correlation coefficients* were computed for the relationships among participants’ data in these six areas:

1. Mean NV rapport behavior frequency
2. Mean NV credibility behavior frequency
3. Total NVC behavior frequency
4. Mean survey rapport items scores
5. Mean whole survey scores
6. Researchers pre-analytic rankings

7. Awareness ranking

8. Negative NV Behaviors

Two statistically significant correlations were determined. A strong positive correlation was found between the mean rapport behavior frequency and the total NVC behavior frequency ($r (4) = .939, p > .01$). This indicates a significant linear relationship between the two variables. Participants with more rapport behaviors tended to have more total NV behaviors. There was no correlation between mean credibility behavior frequency and total NV behavior frequency.

Next, a strong positive correlation was found between the mean survey rapport items scores and the researcher’s subjective ranking of the participants ($r (4) = .867, p > .05$). This indicates a significant linear relationship between the two variables. Participants with a higher score on rapport survey items were likely to be subjectively rated by the researcher as promoting more rapport.

Table 4.21 Combined data correlations

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapp. Beh. Pearson</td>
<td>.347</td>
<td>.415</td>
<td>-.466</td>
<td>.939**</td>
<td>.374</td>
<td>-.415</td>
<td>-.137</td>
<td>.264</td>
</tr>
<tr>
<td>Sig.(2tailed)</td>
<td>.347</td>
<td>.415</td>
<td>.352</td>
<td>.374</td>
<td>.374</td>
<td>-.415</td>
<td>-.137</td>
<td>.264</td>
</tr>
<tr>
<td>Cred. Beh. Pearson</td>
<td>-.466</td>
<td>-.466</td>
<td>-.466</td>
<td>.939**</td>
<td>.374</td>
<td>-.415</td>
<td>-.137</td>
<td>.264</td>
</tr>
<tr>
<td>Sig.(2tailed)</td>
<td>-.466</td>
<td>-.466</td>
<td>.352</td>
<td>.374</td>
<td>.374</td>
<td>-.415</td>
<td>-.137</td>
<td>.264</td>
</tr>
<tr>
<td>Total NVB Pearson</td>
<td>.939**</td>
<td>.939**</td>
<td>.352</td>
<td>.374</td>
<td>.374</td>
<td>-.415</td>
<td>-.137</td>
<td>.264</td>
</tr>
<tr>
<td>Sig.(2tailed)</td>
<td>.939**</td>
<td>.939**</td>
<td>.352</td>
<td>.374</td>
<td>.374</td>
<td>-.415</td>
<td>-.137</td>
<td>.264</td>
</tr>
<tr>
<td>Rapp. Survey Pearson</td>
<td>.347</td>
<td>.415</td>
<td>.352</td>
<td>-.466</td>
<td>-.466</td>
<td>.1</td>
<td>-.30</td>
<td>.857*</td>
</tr>
<tr>
<td>Sig.(2tailed)</td>
<td>.347</td>
<td>.415</td>
<td>.352</td>
<td>-.466</td>
<td>-.466</td>
<td>.1</td>
<td>-.30</td>
<td>.857*</td>
</tr>
<tr>
<td>Whole surv. Pearson</td>
<td>.415</td>
<td>.415</td>
<td>.415</td>
<td>.374</td>
<td>.374</td>
<td>.1</td>
<td>-.30</td>
<td>.857*</td>
</tr>
<tr>
<td>Sig.(2tailed)</td>
<td>.415</td>
<td>.415</td>
<td>.415</td>
<td>.374</td>
<td>.374</td>
<td>.1</td>
<td>-.30</td>
<td>.857*</td>
</tr>
<tr>
<td>Awareness Pearson</td>
<td>-.347</td>
<td>-.415</td>
<td>-.415</td>
<td>-.137</td>
<td>-.30</td>
<td>.857*</td>
<td>.1</td>
<td>.371</td>
</tr>
<tr>
<td>Sig.(2tailed)</td>
<td>-.347</td>
<td>-.415</td>
<td>-.415</td>
<td>-.137</td>
<td>-.30</td>
<td>.857*</td>
<td>.1</td>
<td>.371</td>
</tr>
<tr>
<td>Researcher’s Pearson</td>
<td>.264</td>
<td>.264</td>
<td>.264</td>
<td>.264</td>
<td>.264</td>
<td>.1</td>
<td>.236</td>
<td>.236</td>
</tr>
<tr>
<td>Sig.(2tailed)</td>
<td>.264</td>
<td>.264</td>
<td>.264</td>
<td>.264</td>
<td>.264</td>
<td>.1</td>
<td>.236</td>
<td>.236</td>
</tr>
<tr>
<td>NegativeNV Pearson</td>
<td>.324</td>
<td>.324</td>
<td>.324</td>
<td>.324</td>
<td>.324</td>
<td>.1</td>
<td>.236</td>
<td>.236</td>
</tr>
<tr>
<td>Sig.(2tailed)</td>
<td>.324</td>
<td>.324</td>
<td>.324</td>
<td>.324</td>
<td>.324</td>
<td>.1</td>
<td>.236</td>
<td>.236</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

Finally, a strong positive correlation was found between the mean whole survey scores and the researcher’s subjective ranking of the participants ($r (4) = .857, p > .05$). This indicates a
significant linear relationship between the two variables. Participants with a higher score on the whole survey items were likely to be subjectively rated by the researcher as promoting more rapport. Essentially what this means is that, in this case, the researcher’s subjective judgement was the most accurate predictor of the effect of NV rapport in the study. This pre-analytic ranking was based upon gestures, vocal characteristics (paralinguistics), and level of energy. In answer to RQ # 3, there was no relationship between participants’ level of awareness, their observed behaviors, and student perceptions of rapport. Results are summarized in Table 4.21.

Table 4.21 Combined data correlations

**Conscious and Subconscious NV behaviors**

To answer Research Question # 4, an analysis of the comments in the second interview was necessary.

RQ 4. What are teachers’ reactions to the congruence or lack of congruence between their consciousness of their own NVC skills as indicated in the first interview and the data indicating their observed NVC skills?

All participants reported new learnings in the second interview. Being presented with a summary of behaviors and their frequencies facilitated their reflections and comments. As noted in the discussion of the first interview, participants’ awareness of NVC skills was narrow, only including four out of the 22 NV behaviors observed using Zoller’s (2007) nonverbal behavior patterns. There were many general comments expressing interest and surprise at the areas of nonverbal behavior the participants were not aware of. Specifically, two participants noted breathing and pausing as an area of nonverbal communication of which they had not previously been aware. As expected, teachers noted that particular behaviors such as eye contact, facial expressions, and body movement, were conscious behaviors. Other behaviors, such as voice,
breathing, and pausing were not within their conscious repertoire. This was determined by both an analysis of NVC behaviors discussed in interview one, and participants’ reaction when these NVC behaviors were revealed to have been observed.

**Participants’ Results**

Participant #1 made only one reference to NVC in the first interview, saying, “I try to use a lot of eye contact when I communicate.” In the second interview she expressed the data on her NVC behaviors as “amazing.” This indicates a low awareness of her NVC behaviors. Her surprise in response to the data reflects upon her knowledge of NV behaviors that influence student perceptions. Upon viewing the data about her NVC behaviors she said,

> It gives the language to the whole concept of nonverbal communication and how that leads to reporting needs to comfort zone with the students feeling like I know what I'm doing. That can't be a bad thing, that can only help.

She further commented, “I didn't realize when I signed on, quite frankly, the depth of this work--this is my first real exposure to this research. It's really quite something, it's a whole world that I didn't know existed. Yes, amazing.”

Despite this evidence of a low level of knowledge and awareness, this participant ranked highest in the mean survey rapport scores, and in the mid-range of means for the whole survey. At one point this participant indicated that NVC is something that is not necessarily at the conscious level. “Some of it is just how you act, it’s organic, different ways you are or whatnot.” One thing that was apparent from the second interview was that this participant recognized that she could learn these skills. “When you give someone the information, the knowledge, the
awareness, you've given me this list, and I'm looking at them discreetly now, if I chose to, I could probably improve in a few areas.” She also commented,

I wouldn't suggest any teacher, especially someone who's new to it, try to just take them all by storm, as you said, as well, but look and see it and, yes, but in tweaking, you could consciously tweak a little of these and try to run your own experiments so to speak and see what you notice is your feedback.

Participant # 2 referred only to gesture and proximity in the first interview. When presented with NV data in the second interview, she noted that it was “eye-opening” because she had not thought of many of these behaviors. As with Participant # 1, this indicates a low awareness of her NVC behaviors. Her surprise in response to the data indicates limited knowledge of NV behaviors that influence student perceptions. Upon being presented with data about her NVC skills, she commented,

I would never have dreamed about looking for these things and that kind of stuff because you innately know what works with kids but to be able to observe and pick out and quantify, I guess. This stuff is kind of eye-opening because I again, I would know not having researched it and to know those little things you look for. The bigger things, I think, that you think about and that kind of stuff. It's certainly eye-opening to see the numbers and that kind of stuff. How it's defined, it's interesting to see.

This participant had also indicated that the use of NV skills was not conscious. “You innately know what works with kids.” In the second interview, this participant acknowledged the usefulness of becoming aware of these behaviors. “To build those things into courses for teachers would be important I think.”
This participant was ranked the lowest in many areas, but ironically had the greatest incidences of NV rapport behaviors. She also had the second highest mean in total NV behaviors, so this could have been affected by the frequency of NV rapport behaviors. Based upon the analysis of rankings this makes sense, since there was a significant correlation between frequency of NV rapport behaviors and total NV behaviors, but there were no significant correlations between NV behaviors and survey scores.

Participant #3 scored in the mid-range in NVC frequency and survey scores. She was very direct about the importance of NVC in the classroom, saying, “Some huge percentage of your communication is your nonverbal communication.” She was also the only participant who mentioned voice as a factor in building rapport. This participant demonstrated more awareness of and knowledge about NVC than many of the other participants. Her awareness of her NVC skills appeared to be the most consistent with the data about her NVC skills. She was not particularly surprised to look at this data, but thought it would be valuable to share with new teachers.

I do think it's interesting that, as I'm going to be working with a new teacher next year, this is going to be interesting and helpful to me that I can present, "Okay, here are some things to do." Just like writing, it seems like a very murky sort of thing for many people, and you say, "No, here, you can improve by just working on adding a sensory detail or something specific."

She also commented,

It's correlated with data and we can see, "Here is my list of things and I'm going to practice doing more of this. I know where I can do better because there it is, right there." I think that to let them know that this is a skill, it's not just an inherent quality. I think that to some people it's going to come easier to, but that, "You can learn this." I think that is
helpful to somebody so that they don't look at somebody who's done it for 34 years as I have and think, "Okay, I can't do that." You can. You can learn to do that. I think that would be comforting I would think to a young teacher.

This participant was the only one who expressed some concern about quantifying NVC. She expressed interest that it could be defined as data, but mentioned her qualms about trying to reduce relationships and communication to numbers.

I'm a little conflicted about it because it takes--I said earlier, "There is no magic, there is nothing mystical about it," but at the same time, I think that there is. I don't want my relationship and my communication to become a series of data points.

This participant seemed to be struggling with the difference between NVC as a set of skills and rapport as a quality of relationships, as mentioned in the Findings section on page 82. Discriminating between these two constructs is important in order not to dehumanize concepts of NVC.

Participant # 4 was the most verbal about a range of NV skills, although still only mentioning four out of the 22 skills identified by Zoller (2007). She mentioned expressing herself in writing with the knowledge that there were no NV cues, body language, facial expressions, touch, smiling, and eye contact. She expressed some surprise at the findings indicating that there were some things she would never have thought of, saying, “Obviously, we think of our facial expressions as well and our body. How we move our body. Some of these other things I never would have thought, I have to say.” Generally this participant demonstrated high awareness of a select group of NV behaviors, a good deal of knowledge about those behaviors, and a fairly realistic perspective on her NV skills. She did acknowledge that she could learn more, saying,
That's more like, is it like a natural thing or a practice thing. I definitely think that it can be practiced and learned over time. There are lots of things in our life that at first it is hard and then it becomes second nature just like everything else.

This participant scored among the highest across all areas.

Participant # 5 referred to NVC very little in her first interview. She did mention that NVC was most important in a large group, but did not mention any specific NV skills. When provided with the data, this participant was most emphatic that she was unaware of many of her documented behaviors, even specifically saying, “I was not aware of a lot of them.” She commented on the automaticity of these behaviors and exclaimed, “You are doing them even though you are not thinking about them! I mean it's like when you learn to drive and then you can drive somewhere and forget that you even were driving.” Based upon the qualitative data, this participant had very low awareness and knowledge of NV behaviors. She specifically talked about NVC behaviors that she had not been aware of, saying, “I guess the breathing part got me the most. It's (my knowledge) changed a little in the fact that even the little things the way you breathe or the way you move around, or make sure.”

Her level of awareness of her NV behaviors was consistent with her survey ranking. She had the lowest NV rapport behavior and total NV behavior means of all participants. On the other hand, she scored the highest in whole survey ranking and third in ranking by mean survey rapport. When asked what she might do differently based upon this data, she replied, “I would start thinking of my body. Am I looking at the student? Am I tensing up? Whether you're tensing up. Am I relaxed? I would be a little bit more conscious.”

Finally, participant # 6 referred only to the NV skill of proximity in the first interview. This indicates a low awareness and knowledge of NV behaviors. Here responses to being
presented with data on her NVC behaviors indicated that her awareness of her behaviors was limited. She noted, in general, that she was not aware of the importance of NVC. “I didn't realize is how really it affects them as much as it does. It’s more important looking at this than I thought.” She expressed surprise at a number of specific behaviors.

The breathing never would have dawned on me. I mean I understand it is supposed to make your voice flatter, but pausing like when the pausing the teacher is still or the teacher is moving, I never really thought of that. Just from what you've spoken about and from looking at the list, that is more than just talking to the students, it's more than just going over the material that your voice obviously does make a difference and they should be aware of everything. Look, I never would have thought you were checking the breathing. I never would have thought that you were checking to see what I was doing when I was pausing. It just makes you think about a lot of different things.

This participant also indicated some doubt about whether these skills were able to be learned, attributing them largely to personality or demeanor.

I think there are skills that somebody could be told about. I don't know if you necessarily can teach some of these because some people-- everybody's just different. Like going back to the hand gestures, to me, that's very dramatic. I am not a drama person whatsoever. [laughs] I would have, even knowing that maybe that would work in instances, I would have a hard time being taught to do that because it's so out of my character.

This participant was very surprised at the behaviors that were included in the data. This particular participant scored consistently low in all areas except the frequency of NV credibility behaviors.
Similarities and Differences Among Participants

In analyzing patterns in raw scores from video coding, there were some notable similarities and differences. There were a number of NVC behaviors promoting credibility that were frequently used by all participants. The first was a flat, less rhythmic voice. Zoller (2010) explained that a flatter, less rhythmic voice pattern is associated with credibility. A second frequent NV behavior promoting perceptions of credibility was breathing low in the abdomen. Many participants asked how this was observed. Zoller (2007) notes that one’s shoulders are down and they appear relaxed. This influences perceptions of credibility.

There were also some high frequency NVC behaviors promoting rapport observed in the majority of participants. One of these behaviors was the teacher gesturing or talking to students. This was observed with individual students and with groups, and was one of the most frequent NV behaviors observed. Gestures are interpreted broadly here and include hand gestures and facial expressions. A second high frequency NV rapport behavior was what Zoller (2007) termed “high expectation.” This occurs when the teacher has a still body and direct eye contact when speaking and listening.

Despite the similarities, there was some notable variation among participants. In teacher to object talk (associated with credibility), all participants but one scored high. This behavior includes pointing to something, such as the board, a model, or other object while talking about it (Zoller, 2007). Some studies have provided evidence of increased conceptual understanding correlated with this behavior (Goldin-Meadow, 1999). Participant 5 scored very low on this behavior, perhaps contributing to her low ranking in credibility, and low ranking in the total number of NVC behaviors. Another variation among participants was the behavior of using a rhythmic voice while breathing low, which is associated with rapport. Zoller (2007) observed
that most teachers exhibit this behavior when asking questions or talking socially with students. Participant 2 had more of these behaviors than others, while Participant 6 had fewer. Since this behavior promotes rapport, this may help explain Participant 6’s low rapport behaviors and relatively low rapport survey scores. Participant 2, on the other hand, had the most rapport NV behaviors, but the lowest rapport survey scores. This highlights the negative correlation between rapport behaviors and student perceptions of rapport.

**Summary of Findings**

This chapter summarized the findings of both quantitative and qualitative analyses. First, teachers’ NV behaviors were correlated with measures of student rapport. NV behaviors were broken down into the constructs of *rapport, credibility, and total behaviors*. Each of these constructs was correlated with items on the surveys including rapport items, credibility items, and whole survey items. Simple linear regressions were then used to predict student perceptions, as determined form the survey, from the same constructs of NV behaviors. As a final step in the analysis of aggregated scores, an Analysis of Variance (ANOVA) was calculated to determine the proportion of variance in the dependent variable (NVbehavior) that can be attributed to the independent variable (rapport).

Yielding no statistically significant findings, this method was repeated using grade level groupings. This resulted also resulted in no significant findings. Grouping behaviors and survey scores by grade resulted in an N of only two for each group, likely compromising the statistical analysis.

Qualitative analysis followed. Interviews were analyzed using NVivo software and strong themes emerged that highlighted teachers’ values of respect, communication, connection,
and relationships. Each of these concepts was discussed and supported with quotes from the participants. Next, the initial interviews were analyzed to determine which NVC behaviors teachers had in their conscious awareness and the role of these behaviors as perceived by these teachers. The themes that emerged in this analysis were communication, classroom management, and motivation.

Combining quantitative and qualitative data necessitated ranking teachers’ awareness based upon the number of NV behaviors mentioned in the initial interview and the reaction in the second interview to the observed NV behaviors. At this point, I determined that I could also use the field-based rankings I had noted during the classroom video sessions. There were statistically significant relationships between rapport behaviors and total behaviors, indicating that the more NV behaviors the teacher engaged in, the greater the number of rapport behaviors. Secondly, there was a statistically significant relationship between rapport scores on the surveys and the researcher’s field-based pre-analytical rankings.

A more in-depth discussion of participants’ awareness of their NV behaviors followed, citing comments from the first and second interviews. This was followed by a narrative of each participant that reflected on both quantitative and qualitative analysis of data about that participant. Finally, similarities and differences among participants were highlighted.
CHAPTER FIVE:

DISCUSSION AND IMPLICATIONS

This final chapter summarizes the study and reflects on how the mixed methods approach contributed to a more complete understanding of the effect of NVC skills on rapport in the K-12 classroom (Creswell & Plano-Clark, 2011). The purpose of this study was to determine if teachers’ awareness of their own NVC skills is consistent with an objective measure of their NVC skills and if these skills had an effect on student perceptions of rapport. There is evidence that the effects of NVC are realized whether individuals are conscious of their nonverbal behaviors or not (White, 2016). Consciousness of NVC, termed Communicative Intelligence (CI), promotes greater communicative flexibility and authenticity and increases rapport (Zoller, 2015). This study sought to understand the role of NVC in increasing rapport between teacher and students at the K-12 level.

The mixed methods convergent parallel design was chosen as the method that would result in a spectrum of data from multiple points of view. Through this methodology, I was able to gather data on the knowledge and awareness of NVC from six teachers, the perceptions of students about their teachers, and the actual NVC behaviors used by teachers. The participants represented elementary school, middle school, and high school levels. In presenting data to the participants before the second interview, I was able to gather more data that helped me interpret the awareness and knowledge level of teachers. In this chapter, I recap the study’s methodology, importance, and limitations and strengths. I review the research questions and summarize the major results and observations before discussing implications for educators.
Synopsis of the Context and Problem

Teachers at all grade levels are expected to address the cognitive and affective needs of the students in their charge. An area of skill that has a significant effect on affective student outcomes and an indirect effect on cognitive outcomes at the college level is the ability to connect with students emotionally (Bulach, 1996; Sanders, 1990; Teven, 2001). This emotional connection, or rapport, is created through verbal and nonverbal channels (Singh, 2013; Teven, 2001; Zoller, 2010). The problem addressed in this study is that the effects of NVC on rapport in the K-12 classroom has not been studied as extensively as the effects at the college level (Nelson, Grahe, & Ramseyer, 2016; Rogers, 2015; Tickle-Degnen & Rosenthal, 1990, Zoller, 2010). Another gap in the research is the conscious or subconscious nature of nonverbal communication (Pentland & Heibeck, 2010). If NVC skills have an effect on rapport in the K-12 classroom, teachers’ increased awareness and knowledge of these skills have the potential to increase student affective outcomes. I designed this study to determine the effects of NVC on rapport in K-12 classrooms and to determine the level of awareness K-12 teachers have of their NVC skills.

This study took place in a large district in Maine approximately in the top 20% of district size ranking in Maine. Six participants volunteered as participants in the study. Two teachers each represent elementary, middle, and high school levels. Evidence exists to indicate that teachers’ nonverbal communication skills are a significant factor influencing student affective outcomes (Mehrabian, 1971; McCroskey et al., 1995; Roorda et al., 2011; Zoller, 2010), yet the findings in this study do not support that evidence at the K-12 level. A key area of research in nonverbal communication is the effect that this form of communication has on relationships between teachers and students. A review of the literature demonstrates the relationship between
communication and other phenomena including caring, relatedness, and engagement (Cooper, 2004; Finn et al., 2009; Morganett, 1991; Noddings, 2005; Nowak-Fabrykowski, 2012; Teven, 2001; Vogt, 2002).

This study focused on the relationship between K-12 teachers’ NVC skills and student perceptions of rapport in the classroom. Further, teachers’ awareness of their NVC skills was explored. By increasing awareness of those NVC skills that foster rapport, this research provided teachers with an opportunity to capitalize on the NVC skills they have and increase their tool box of effective NVC skills (Burgoon, Guerrero, & Manusov, 2011; Neill & Caswell, 1993; White & Gardiner, 2013; Zoller, 2015). If students’ perceptions of rapport correlate with teachers’ nonverbal skills, an increased awareness and knowledge of these skills would contribute to teachers’ efficacy in affective education. Affective learning is defined as students’ willingness to receive information and manifests itself in emotions related to learning (Mottet et al., 2008). There is also some evidence that NVC can impact cognitive learning (Chaudhry & Arif, 2012; Chesebro & McCloskey, 2001; Hattie, 2012; Ikeda & Beebe, 1992; Hamre & Pianta, 2001; Maldonado-Carreño & Votruba-Drzal, 2011).

The literature is rich with references to NVC and its connection to topics related to rapport such as immediacy (Mehrabian, 1971; Butland & Beebe, 1992; Andersen, 1980; McCroskey et al., 2014), caring (Cooper, 2004; Finn et al., 2009; Morganett, 2991; Noddings, 2005; Nowak-Fabrykowski, 2012; Teven, 2001; Vogt, 2002), relatedness (Ryan & Deci, 2000; Van Nuland et al., 2012; Vogt, 2002), and engagement (Park et al., 2012; Roorda et al., 2011; Skinner & Belmont, 1993). Finally, NVC has been identified in literature in the field of neuroscience and physiology (Adolphs, 2003; Boland, Lian, & Formichella, 2005; Evans &
Schamberg, 2009; Johnson & Reed, 2012; Leuner, Capitaniti, & Gould, 2012; Luby et al., 2012; Spilt, Hughes, Wu, & Kwok, 2012; Zoller, 2010).

**Synopsis of Methodology**

The methodology of this study was driven by the research questions.

RQ 1. What NVC behaviors are used by K-12 teachers in a large district in Maine?

RQ 2. How do teachers’ NVC skills correlate with measures of rapport from student surveys?

RQ 3. How does teachers’ awareness and knowledge of NVC correlate with their observed NVC behaviors and student perceptions of rapport?

RQ 4. What are teachers’ reactions to the congruence or lack of congruence between their consciousness of their own NVC skills as indicated in the first interview and the data indicating their observed NVC skills?

A mixed methods convergent parallel design was chosen for this study to allow for an interpretative analysis of the data to add to the essential knowledge about NVC in the classroom (Maxwell, 2013; Miles, Huberman & Saldana, 2014). Most NVC research has been quantitative, so adding a qualitative aspect allowed for deeper analysis of teachers’ understanding of these behaviors (Maxwell, 2013; Worley et al., 2007). Quantitative data was collected through student surveys and coding NVC behaviors from classroom videos. Qualitative data was collected through two interviews with each teacher; one at the beginning of the data-collection cycle and one at the end.

A pilot study was conducted in the spring of 2016. This highlighted the barriers to conducting research studies in K-12 schools, particularly the obstacle of getting parental permission. For this study, the school district chosen gave classroom climate surveys to their
students as part of the teacher evaluation cycle. This eliminated a major hurdle. I hoped to choose randomly from the volunteers at each grade level grouping, but I only got two volunteers at each level, so they were chosen as the participants. Data were collected during the 2017-2018 academic year in the months of January through June.

I conducted an initial interview with each of the six participants. The semi-structured interview protocol was adapted from a validated instrument used in a study examining instructional communication competence (Worley et al., 2007). Over the course of the next few months, I videotaped each teacher for three one-hour sessions. Once the video-taping was complete I conducted a frequency analysis of the videos. I separated the three hours of video into ten minute segments. Using an online randomizer, I randomly chose four ten-minute segments for each teacher. Using the table of 22 nonverbal patterns created by Zoller (2007), I watched each ten-minute segment five times, concentrating on four or five behaviors each time. I recorded one point for each behavior occurring each minute to get the total frequency. Therefore, since forty minutes of video were analyzed for each teacher, the highest frequency they could score on any one NV behavior was forty. After coding the videos, I interviewed the teachers again, presenting them with a summary of the frequency of NVC behaviors (See Appendix D).

Two types of coding were used in the first cycle – protocol and provisional coding (Miles et al., 2014). Protocol coding is used to describe observable action, using terms validated by previous research by Zoller (2007) (See Figure 3.3). NVC behaviors observed in the classroom were coded with this method, as described above. Provisional coding was used in the initial interview coding to include some of the operational terms in this study (Miles et al., 2014). Thematic analysis was conducted in the second cycle of coding of the interviews, adding sub-
codes to the Provisional Coding. Quantitative analysis was conducted using SPSS, Version 24, while qualitative data analysis was conducted using NVivo 10.

**Strengths, Limitations, and Trustworthiness**

The mixed methods multiple convergent parallel design had strengths and limitations that are revisited here. Mixing quantitative and qualitative data provides the most coherent and rich view of the results because qualitative approaches reflect the participants’ perceptions and values and quantitative approaches inform those perceptions and values. Together the two methods of this phenomenological approach provide rich data that are authentic and relevant to teachers (Glesne, 2011; Seidman, 2013).

Another strength of the study was its contribution to the literature. This study fills gaps in education communication research by expanding existing quantitative research by identifying and analyzing teachers’ awareness of NVC using a qualitative approach. Furthermore, this study supplements existing research by conducting it in grades K – 12. Based on an analysis of sixty-one studies on the effects of NVC, the samples in these studies were predominantly college undergraduates. Of sixty-one studies examined, 1/3 were conducted at the high school level or elementary school level. This establishes a need to study this topic in grades K – 12 schools. A final strength lies in the singular use of one researcher collecting and interpreting the data. This maximizes fidelity in the coding of both qualitative and quantitative data.

A number of other strengths bear mentioning. Collection tools strengthened the study. Validated interview protocols (Worley et al., 2007) and validated codes for nonverbal behaviors (Zoller, 2007) increased the trustworthiness of the study. The uniformity of the collection process and the random selection of video segments to code strengthen the results and lend credibility to correlational analyses.
There were some major limitations worth reviewing. The purposeful sampling was more restricted than anticipated. Since there were exactly six volunteers, any possibility of random sampling was eliminated. Additional sampling biases are attributed to all participants being from the same school district, and all participants being female. This lack of diversity decreases generalizability of the study. Furthermore, the participant pool was very small. This is particularly relevant since the strongest association were found at the grade level tier, at which there were only two participants each.

The level of scrutiny of study design and analyses is worth noting. The committee guiding this work included two accomplished qualitative researchers and an international leader in nonverbal communication, whose coding categories I used in this study. The committee’s rigorous critique and feedback contributes to a trustworthy product.

**Summary of Major Results**

This study involved interviewing six K-12 teachers twice, once at the beginning of the data collection period and once at the end. Two teachers from each of three grade spans (3-5, middle school, and high school) volunteered to be videotaped teaching for three separate one-hour periods. Finally, student survey data was collected for each teacher to measure students’ perceptions of the teacher and the class.

First, a literature review was conducted to determine if there was evidence in the literature that NVC teacher skills contributed to rapport in the classroom. The literature review provides evidence that this is unequivocally supported by the research. NVC has been acknowledged as a vital factor in communication for centuries. Quintillianus, trans. 1922; Darwin, 1872, p. 151). In the 1970’s and 80’s, NVC began to be studies more scientifically and the field was established (Argyle, 1975; Birdwhistell, 1970; Hall, 1959; Leach, 1972). As the
study of NVC developed as a science in the twentieth century, concepts and vocabulary emerged in a variety of academic disciplines to frame knowledge on this topic. NVC’s effect on interpersonal relationships and rapport is heavily supported and is a phenomenon that stems from this larger field and has been studied extensively for decades (Andersen, Norton, & Nussbaum, 1981; Beachboard, Beachboard, Li, & Adkison, 2011; Butland & Beebe, 1992; Sanders & Wiseman, 1990; Witt et al., 2004). Connections in research to concepts such as caring, engagement, rapport, and relatedness are pervasive. Neuroscience has established the need of students to experience good quality relationships. The literature review established that NVC plays an important role in affective development at the college level. Although the effects of NVC have been studied widely, and there is some evidence that NVC skills affect student perception of rapport in K-12 classrooms, there is a scarcity of studies in this setting (Nelson, Grahe, & Ramseyer, 2016; Rogers, 2015; Tickle-Degnen & Rosenthal, 1990, Zoller, 2010).

Teacher perceptions and awareness of NVC have not been studied extensively, either (Burgoon, Guerrero, & Manusov, 2011; Neill & Caswell, 1993; White & Gardner, 2013; Zoller, 2015).

Data analysis addressed all four research questions and yielded the following results. Quantitative analysis revealed that there was a range of reliability of the three versions of the student survey from an alpha of .560 to an alpha of .928. The three constructs of rapport, credibility, and whole survey were consistently higher for high school and lowest for grades 3 – 5, indicating that the surveys became more reliable as grade level increased. This is consistent with the evidence that perceptions of rapport vary with age and grade level. Hagenauer and Hascher (2010) found significant declines in student-teacher relations between sixth and seventh grade. Roorda et al. (2011) determined that the association between teacher-student relationships and engagement were most significant at the secondary school level. This seems counter-
intuitive when we think about the affective focus in the earlier grades, but the findings may be more reflective of the reliability of the measures of rapport than differences in rapport in the grade levels.

Pearson correlation coefficients were computed to determine relationships between:

1. NV rapport behaviors (from video coding) and rapport survey scores,
2. NV credibility behaviors and rapport survey scores,
3. Total NV behaviors and rapport survey scores,
4. NV rapport behaviors and whole survey scores, and
5. NV credibility behaviors and whole survey scores.
6. Total behaviors and whole survey scores

No significant relationships were determined. This finding is not consistent with the literature. Linear regressions were conducted to predict survey scores from NV teacher behaviors. It was determined that neither NV rapport behaviors nor NV credibility behaviors is a significant predictor of rapport survey scores. Furthermore, neither NV rapport behaviors nor NV credibility behaviors predicted rapport survey scores or whole survey scores. Once again, no significant correlations were determined. This seems contrary to the literature, but since there were three different forms of the survey for different grade-level groups, the data was not as robust as it may have been with one form of the survey for all students. This also highlights the complexity of research conducted at the K-12 level. Isolating factors in a classroom to determine relationships among variables is extremely difficult. Results may not correlate with studies that used a more experimental approach. This research/practice gap is common in educational research (Berliner, 2002; McIntyre, 2005; Nuthall, 2004).
Since there were three forms of the survey, statistics were conducted to examine predictors of survey scores for each form. In these grade-level calculations, NV rapport behaviors were a more accurate predictor of rapport survey scores than NV credibility behaviors, but were still not significant predictors. Finally, when a simple linear regression was conducted to predict whole grade level survey scores from grade level NV rapport teacher behaviors, there was no significant result (Sig. = .089). These results are not consistent with previous research on NV behaviors’ effect on rapport. The grade level analysis was hindered by the small N size since there were only two teachers at each grade level.

Further analysis was completed to determine relationships. Participants were subjectively ranked by the researcher for overall impressions of rapport determined from field notes and awareness of NVC skills determined by an analysis of interviews. This data revealed two significant relationships. One significant correlation was between the ranking by mean of NV rapport behaviors and total behaviors, indicating that teachers who were generally more expressive engaged in more nonverbal rapport behaviors than less expressive teachers. The second area of significant correlation was mean survey rapport scores and the subjective ranking of the researcher. This is an interesting finding, indeed! However, generalization of this finding would be premature. This researcher has developed skills in identifying nonverbal behaviors, which could have a strong effect on a subjective response, albeit subconsciously. Although this researcher employed a reflexive approach, the effect of her worldview, presuppositions, biases and values cannot be isolated or differentiated. This phenomenon warrants more research and has the potential to have significant implications for practitioners, particularly those evaluating teachers. This is discussed further in the Implications section.
Qualitative components of the study provided an analysis of individuals’ awareness and understanding of NV behaviors to complement the quantitative data (Maxwell, 2013; Worley et al., 2007). Substantial qualitative data strongly supported the themes of respect, communication, connection, relationships, and nonverbal skills (eye contact, body language, and voice). One participant encapsulated the value of respects saying, “I always will support somebody who's talking, showing that I'm respecting them and then that becomes the baseline of the class and this is the way we do things here.” In referring to the importance of communications, one participant shared,

The way you ask a question will hopefully build a verbal communication. I really still think it's important to-- And if you see somebody wave, nod your head, you don't have to necessarily say hello but eye contact, little things like that so they know at least you acknowledge them.

One example of a reference to connection follows. “I would say (one of the most important things is) the ability to connect with the kids and to get your message across and try to understand what they're saying and how that's impacting on their learning.” Finally, in reference to the primacy of relationships, one participant stated, “...the way high school students need to be taught…. is based on a relationship.”

Not surprisingly, almost all references to the first four themes were in the initial interview. And, though there were roughly an equal number of references to NVC in both the initial and follow-up interviews, the references to NVC in the first interview only cited eye contact, facial expression, and body language while the second interview included additional references to breathing, tension, pausing, and voice. Zoller (2010) specifically identifies voice, gestures, breathing, and mirroring as key nonverbal components influencing rapport, yet teachers
were not aware of most of these NV behaviors. This demonstrates the finding that there were some NV behaviors that teachers were not consciously using. Most participants expressed surprise that these behaviors had an effect on students despite the fact that the highest frequency behaviors observed in all teachers were voice pattern and breathing.

Since there was the closest correlation between rapport behaviors and whole survey scores, a comparison was done to associate those factors with participant’s awareness and knowledge. A Pearson correlation coefficient revealed no significant relationship between participants’ level of awareness and NV behaviors or survey results.

**Discussion**

Returning to the conceptual framework for this study lends clarity to the discussion. The conceptual framework indicates the existence of conscious and subconscious nonverbal behaviors that influence a number of factors under the category of immediacy: caring, engagement, rapport, and relatedness. Measuring the rapport behaviors of K-12 teachers, and then sharing the results with them, prompted dialogue that provided a window into their conscious and subconscious nonverbal behaviors. It is hypothesized in this conceptual framework that increasing consciousness of nonverbal behaviors contributing to rapport may lead to greater “communicative intelligence” (Zoller, 2010). This study did not examine that hypothesis, but adds baseline data for future research into this area to confirm the relevance of this framework. Continued research that re-assesses the frequency of NVC behaviors and their effect on rapport after teachers’ subconscious behaviors are brought to awareness is warranted to lend credence to the concept of “communicative intelligence.” If a teacher’s ability to build rapport in the classroom improves significantly after increasing awareness of the NVC skills
used, then that teacher may be considered to have an increased proficiency in communication, thus greater “communicative intelligence” (Zoller, 2010).

Moving through the conceptual framework, the existence of NVC in K-12 classrooms is supported by this study. This study also establishes that some of these behaviors are conscious and some are subconscious. The study has failed to produce evidence that there is a significant relationship between these NV behaviors and immediacy. What follows are the major findings of this study organized by purpose and research questions and grounded in the conceptual framework.

Figure 5.1 Conceptual Framework as Delinieated in Chapter Two
This Study Does Not Support the Evidence in the Literature that NVC Skills Contribute to Rapport in the Classroom

This study confirmed that there is evidence in the literature that NVC skills contribute to rapport (Andersen, 1970; Argyle, 1975; Birdwhistell, 1970; Hall, 1959; Leach, 1972; Zoller, 2010). A variety of terms and concepts are used in different disciplines to refer to rapport. These terms include caring (Cooper, 2004; Finn et al., 2009; Morganett, 1991; Nowak-Fabrykowski, 2012; Teven, 2001; Vogt, 2002), relatedness (Bieg, Rickleman, Jones & Mittag, 2013; Roorda et al., 2011; Ryan & Deci, 2000; Vogt, 2002; Wubbels & Brekelmans, 2005), rapport (Tickle-Degnen & Rosenthal, 1990; Nelson, Grahe, & Ramseyer, 2016; Lammers & Gillaspy, 2013; Zoller, 2015), and engagement (Anderson, Christenson, Sinclair, & Lehr, 2004; Boykin & Noguera, 2011; Harris, 2011). Studies in neuropsychology also support the importance of relationships and their influence on brain development (Adolphs, 2003; Evans & Schamberg, 2009; Leuner, Capaniti, & Gould, 2012; Luby et al., 2012; Spilt, Hughes, Wu, & Kwok, 2012). Consciously or subconsciously, teachers use nonverbal behaviors that promote rapport.

Participants varied in their consciousness of NV behaviors but there was no significant relationship between levels of awareness and NV behaviors. One participant scored the highest on NV behaviors but low in awareness and commented, “You innately know what works with kids.” Iacoboni, (2009), Johnson and Reed (2012) and Zoller (2010) all emphasize the effects of quality teacher relationships on students.

Although there is extensive evidence supporting the relationship between NVC skills and rapport, a majority of the research in this area has been conducted with undergraduate students. This is not uncommon with educational research since these students are readily available to
researchers and can autonomously agree to participate. But applying the results of this research to students in K-12 education is not appropriate since factors of cognitive development, emotional development, and social development change dramatically as children mature. Research at the K-12 level is more difficult because it requires parental permission and involves many other professionals’ involvement.

In conclusion, although there is strong evidence that NVC skills contribute to rapport in the classroom at the college level, generalization of these findings to the K-12 level is not warranted since less research exists at the K-12 level. This study attempted to validate that NVC skills contributed to rapport at the K-12 level. In general, the findings in this study did not mirror those in the literature.

**K-12 Teachers Engage in a Broad Spectrum of NV Behaviors that Promote Rapport**

Research question # 1 asked what NV behaviors were used by K-12 teachers. Through an analysis of four randomly selected ten minute segments from three hours of videos taken of each teacher, all teachers engaged in NV behaviors that promote rapport and NV behaviors that promote credibility. Teachers used between 3.4 and 1.2 times as many NV rapport behaviors as NV credibility behaviors.

Some high frequency NVC behaviors promoting rapport were observed in the majority of participants. One of these behaviors was the teacher gesturing or talking to students. The most frequently observed behavior, this occurred across contexts with individual students and with groups. Teachers used hand gestures, eye contact, and facial expressions when addressing students. One participant stated, "How did you say that? What did your face looked like? What did your body looked like? What was you appearance to the kids?" Another high frequency NV rapport behavior was the teacher stopping movement and having direct eye contact when
speaking and listening. Zoller (2007) termed this behavior “high expectation” in his list of nonverbal patterns.

Despite differences in levels of awareness and student perceptions of rapport, participants shared some prominent NV skills. All participants had a high frequency of using a relatively low, flat, less rhythmic voice. This pattern occurred when the teacher was providing an answer or giving directions. Secondly, all participants were observed breathing in a relaxed manner much of the time. This behavior increases credibility (Zoller, 2010).

Participants also shared common NV behaviors leading to rapport. One of the most frequent behaviors observed in all teachers was the behavior of gesturing to or facing students when addressing them, either as a group or individually. Finally, all teachers frequently stood still and made direct eye contact with students when speaking or listening.

There was some notable variation among participants in which one or two teachers did not share a behavior exhibited by a majority of the participants. These included teacher to object talk (associated with credibility), and using a rhythmic voice while breathing low, which is associated with rapport. A clear relationship indicating that these behaviors affected students’ perceptions of rapport was not evident.

**No Significant Relationship was established between Rapport Behaviors and Student Perceptions of Rapport**

In this study of six teachers at three different grade level groupings, there was no significant correlation found between either observed rapport behaviors and rapport survey scores or between observed rapport behaviors and whole survey scores. Pearson correlation coefficients were computed comparing all factors and yielded no significant results. Predictive analyses were computed with simple and multiple linear regressions and resulted in no
significant predictors. This is a dramatically different finding than most studies in the literature review. There were a few studies conducted at the K-12 level that found similar results. In a study with ninth grade students, Mottet et al. (2008) found that, contrary to many of the studies with college students, NVC did not influence affective learning. This was attributed to differences in culture.

It is important to note that a flaw in the methodology of this study was not anticipated. In designing the study, I was under the impression that there would be one form of the survey at all grade levels. Having embarked upon the field work, I discovered that there were three different forms of the survey correlated with the three different grade level groupings. Hence, grade level comparisons were necessary to account for having three different forms of the survey. Of course, the result was that the N size for teachers was just 2 at each grade level, making the results much weaker.

When comparing by survey form at the grade level group, no significant relationship was computed between observed rapport behaviors and whole level survey scores. Calculations showed that the relationships between NV rapport behaviors and rapport survey scores, total NV behaviors to rapport survey scores, and NV rapport behaviors to whole survey scores were not significant. With a higher N size at each grade level, these results may be different. As practitioners apply this study to their work, they should take these limitations into account and consider the relative strength of the grade-level relationships as indicative of a potentially strong relationship between NV behaviors and student perceptions contingent upon the results of further research.

Finally, it was evident that middle school teachers received the lowest survey scores across the board, whether rapport survey or whole survey items were considered. Some research
is relevant here. Hagenauer and Hascher (2010) employed surveys and diaries with 356 middle school students to determine which needs were met through the lens of self-determination theory (STD). They concluded that there was a significant decline in student-teacher relations between sixth and seventh grade.

**Researchers Field-Based Ratings were a Significant Predictor of Student Perceptions of Rapport in This Study**

One fascinating aspect of the study emerged from field notes. As a researcher, I tried to predict which participants would score the highest in student perceptions of rapport. I ranked the participants from 1 – 6, with 6 being the highest ranking, before statistical analysis was done. It turned out that the subjective ranking was significantly correlated to both rapport survey and whole survey scores. What does this mean? There are many contingencies to consider here. First, my level of knowledge of NVC is likely to be considerably higher than the average person, since I have been engaged in studying this topic for seven years. A 1993 Ambady and Rosenthal study implies that regardless of knowledge level, nonverbal behavior can influence subjective judgements. They found that small slices of observation of nonverbal behavior (10 – 30 seconds) by strangers, was significantly correlated with the rating of these teachers by principals. They found that physical attractiveness was not a significant factor. Riniolo, Johnson, Sherman and Misso (2010) found that college professors perceived as attractive and younger consistently received student evaluation scores that were higher than those who were deemed unattractive and older. Naylor (2007) determined that judgements based on nonverbal cues were accurate.

The finding that field-based pre-analytic ranking was significantly correlated with student perceptions of rapport is a particularly salient one suitable for future research. A reflexive approach involves an awareness of the researchers worldview, values, and biases. Further
research would contribute to the findings in this study. To increase objectivity, a rubric, such as the one below, could be used to quantify 20 minute observations. Once validated, a correlation between scores from the rubric and other measures of student rapport could be determined.

Figure 5.2 Observation Rubric for NV Behaviors that Promote Rapport

<table>
<thead>
<tr>
<th>Paralinguistics</th>
<th>Not Proficient</th>
<th>Emerging</th>
<th>Proficient</th>
<th>Exceeds Proficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paralinguistics</strong></td>
<td><strong>Gestures</strong></td>
<td>Teacher rarely gestures to student or class Teacher rarely gestures to object other than a person(board/lab/book/location)</td>
<td>Teacher gestures to student/class &lt; 5 times Teacher gestures to object other than a person(board/lab/book/location) &lt; 5 times</td>
<td>Teacher gestures to student/class at least 5 times Teacher gestures to object other than a person(board/lab/book/location) at least 5 times</td>
</tr>
<tr>
<td><strong>Expectation &amp; Respect</strong></td>
<td>Low expectation: Moving body, indirect eye contact when making a point Low respect: moving body, indirect eye contact when listening to student</td>
<td>Low expectation and high respect or High expectation and low respect</td>
<td>Demonstrates high respect &gt; 5 times Demonstrates high expectation &gt; 5 times</td>
<td>High respect: still body, direct eye contact when listening to student High expectation: still body, direct eye contact when making point</td>
</tr>
<tr>
<td><strong>Voice</strong></td>
<td>Voice pattern – flatter/less rhythmic Voice does not convey emotion</td>
<td>Voice pattern – sometimes rhythmic</td>
<td>Voice pattern is rhythmic</td>
<td>Voice pattern very rhythmic</td>
</tr>
<tr>
<td><strong>Pausing &amp; Breathing</strong></td>
<td>When pausing, teacher is moving Breathing high in the chest</td>
<td>Teacher is either moving when pausing or breathing high in the chest</td>
<td>When pausing, teacher is frequently still Breathing is frequently low in the abdomen</td>
<td>When pausing, teacher is still most of the time Breathing low in the abdomen most of the time</td>
</tr>
<tr>
<td><strong>Voice &amp; Breathing</strong></td>
<td>Voice flat while breathing high Voice flat while breathing low</td>
<td>Voice rhythmic while breathing high</td>
<td>Voice rhythmic while sometimes breathing low and sometimes breathing low</td>
<td>Voice consistently rhythmic while consistently breathing low</td>
</tr>
</tbody>
</table>

Adapted from Zoller (2007)

**Rapport is Important to Teachers**

The themes of respect, communication, connection, relationships, and nonverbal skills were determined from the first set of interviews. This supported the importance of rapport to teachers. Participants referred to respect frequently. They demonstrated an understanding that respect should be mutual, and they tried to model respect for their students.
Communication was a second major theme that emerged. Participants agreed that communication was essential in teaching. They understood that communication established caring relationships. Participants discussed communication in a variety of contexts including whole class, face-to-face, and through media. They also demonstrated an awareness of the reciprocal nature of communication.

Five out of six participants mentioned that connection with students was very important. Participants shared that connection was necessary for engagement. They realized that seeking connections with students took deliberate effort. Related to this theme was the theme of relationships. Participants were aware that relationships were reciprocal and involved some level of vulnerability. Teachers talked about getting to know the interests of their students and sharing something about their lives, as well.

**Teachers are Aware of Only a Fraction of the NV Skills They Use**

A qualitative analysis of interviews revealed that teachers were only aware of a small percentage of the NV skills that they exhibited, consistent with the findings of White and Gardner(2013). Of the 22 behavior patterns measured using Zoller’s (2007) protocol, only three were mentioned more than once. Participants talked about eye contact, body language, and gesturing. The NV skills mentioned were all in the area of parakinesis, rather than paralanguage. There was little acknowledgement of the effects of voice, breathing, or pausing on rapport. All participants expressed surprise in the second interview to find that these were factors that promoted rapport. One participant commented, “…it's a whole world that I didn't know existed. Yes, amazing.” Another participant noted that it was “eye-opening” because she had not thought of many of these behaviors, and concluded, “I would never have dreamed about looking for these things.” A third participant commented, “You are doing them even though you are not thinking about
them!” Finally, a participant voiced her surprise at the behaviors she was exhibiting, saying, “I didn’t realize how really it affects them as much as it does. It’s more important looking at this than I thought.” This finding indicates that awareness of NV skills that promote awareness is low. With an increased knowledge and awareness, teachers would be able to increase their “Communicative Intelligence” (Zoller, 2015).

Although participants had a narrow view of the kinds of NV behavior that promoted rapport, they did demonstrate a good understanding of the functionality of NV behavior. They agreed that communication was the most compelling function. Participants specifically noted the effect of communicating caring to students and connecting with them emotionally. There was some reference to communication of content, but it was not widely recognized that certain NV skills, such as gestures, can increase conceptual understanding (Goldin-Meadow, Kim & Singer, 1999). One teacher acknowledged the importance of alignment between verbal and nonverbal messages, another hallmark of “Communicative Intelligence” (Zoller, 2015).

Participants identified classroom management as a functional use of NV skills. Participants used prompts and cues to direct groups of students or communicate with individual students. Although extensive research supports the role of NVC in motivation, most participants didn’t mention this.

**Teachers’ Awareness of their NVC Skills Is Not Correlated with Observed NV Behaviors or Student Perceptions of Rapport**

Levels of teacher awareness of NV skills was analyzed and ranked using interview data. Vocabulary used and ideas and concepts communicated resulted in a ranking from 1 – 6, with 6 being the highest level of awareness. This ranking was not affected by the breadth of knowledge
about NV skills that promoted rapport, but rather the articulation of the presence and relevance of NV skills.

A Pearson Correlation Coefficient revealed that there were no significant relationships between participants’ level of awareness, their observed behaviors, or student perceptions of rapport. This is supported by the significant relationship between my subjective rating and survey scores, since this rating did not take into consideration the participants’ awareness of NV skills.

One should proceed with caution in drawing conclusions from this study. Since no significant correlations linking NV behaviors to rapport are evident, analysis with a larger population for each form of the survey would provide results that may confirm or refute these correlations. Nevertheless, this study adds to knowledge of the effect of NVC skills in K-12 classrooms, and, consistent with studies at the college level, indicates that a relationship between NV behaviors of teachers has an impact on students’ perception of rapport.

**Implications**

The findings of this study have implications for teachers, administrators, teacher preparation programs, and researchers. Table 5.1 summarizes the connection between the findings and the implications.

**Implications for Teachers**

This research has the potential to make a contribution in a number of ways. Teachers can benefit from this knowledge by learning and implementing NVC skills to improve their teaching and classroom management. The data in this study suggest that teachers have an awareness and understanding of just a fraction of the NVC skills that contribute to rapport. It is evident from this analysis, that rapport is something that teachers care about deeply. Providing
them with a greater understanding of these NV behaviors may result in improved rapport. The N size of this study was too small to draw definitive conclusions about the effects of NV behaviors on student perceptions of rapport, but the literature suggests there is a significant relationship.

Table 5.1: Implications of Findings

<table>
<thead>
<tr>
<th>Finding</th>
<th>Implications for Teachers</th>
<th>Implications for Leaders</th>
<th>Implications for Teacher Prep Programs</th>
<th>Implications for Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is evidence in the literature that NVC skills contribute to rapport in the classroom.</td>
<td>Learn and implement NVC skills to improve their teaching and classroom management.</td>
<td>Be aware of the NVC skills that promote both rapport and credibility.</td>
<td>Participants in this study agreed that these were valuable skills that should be taught.</td>
<td>More K-12 research is needed. Compare factors such as teacher gender, years of experience, rural/urban school communities, and socio-economic diversity.</td>
</tr>
<tr>
<td>K-12 Teachers in this study engaged in a broad spectrum of NV behaviors that promote rapport.</td>
<td>Take NV skills into consideration when assessing teacher quality. Add this knowledge to tool box of feedback topics.</td>
<td></td>
<td></td>
<td>Examine whether educator preparation programs are teaching NV skills.</td>
</tr>
<tr>
<td>This study did not find a significant relationship between rapport behaviors and student perceptions of rapport.</td>
<td></td>
<td></td>
<td>Conduct research with larger N size to confirm or refute these findings.</td>
<td></td>
</tr>
<tr>
<td>Researcher’s field-based rankings were a significant predictor of student perceptions of rapport.</td>
<td></td>
<td>Action research at the district level would provide data that would support or refute this finding.</td>
<td></td>
<td>Increase the number of subjective raters to determine a relationship between subjective ratings and student perceptions of rapport.</td>
</tr>
<tr>
<td>Rapport is important to teachers. Providing them with a greater understanding of these NV behaviors may result in improved rapport.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers are only aware of a fraction of their NV behaviors. Isolating and practicing these skills would lead to automaticity, just as any skill building activity would.</td>
<td></td>
<td>Segments of the teacher evaluation frameworks could be leveraged to provide feedback on NVC skills.</td>
<td>Conduct pre and post testing to determine how teacher consciousness might impact measures of rapport.</td>
<td></td>
</tr>
<tr>
<td>Awareness of NVC skills does not correlate with observed NV behaviors or student perceptions of rapport. Although subconscious NV behaviors can have an effect on rapport, increasing the awareness of NVC skills may contribute to &quot;Communicative Intelligence.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All participants in this study indicated that these skills would be valuable to beginning teachers and could be learned. They provided feedback about how to approach this. One participant said,
I wouldn't suggest any teacher, especially someone who's new to it, try to just take them all by storm, as you said, as well, but look and see it and, yes, but in tweaking, you could consciously tweak a little of these and try to run your own experiments so to speak and see what you notice is your feedback.

Participants indicated that isolating and practicing these skills would lead to automaticity, just as any skill building activity would. According to another participant,

It's correlated with data and we can see, "Here is my list of things and I'm going to practice doing more of this. I know where I can do better because there it is, right there." I think that to let them know that this is a skill; it's not just an inherent quality. I think that to some people it's going to come easier to, but that, "You can learn this." I think that is helpful to somebody so that they don't look at somebody who's done it for 34 years as I have and think, "Okay, I can't do that." You can. You can learn to do that. I think that would be comforting I would think to a young teacher.

Another commented,

That's more like, is it like a natural thing or a practice thing. I definitely think that it can be practiced and learned over time. There are lots of things in our life that at first it is hard and then it becomes second nature just like everything else.

As a whole, these findings can raise the awareness and understanding of the effects of the NV behaviors that teachers engage in, providing them with tools to improve their “communicative intelligence” (Zoller, 2015). Reflection is a core component of improving practice, and raising subconscious behaviors to the conscious level may provide a tool for teachers to increase rapport in their classroom. This tool will help them in accomplishing the very values they articulate: communication, relationships, and respect. Practicing and improving
NV behaviors will not in itself result in the effectiveness, since teaching is a complex skill that includes the whole person, one that provides challenges in bridging research and practice (Berliner, 2002). Yet, learning, employing, and reflecting upon research-based behaviors such as NVC, can potentially contribute to all teachers’ abilities in improving rapport.

Implications for School Administrators

The early twenty-first century has proven to be a turning point for Maine teachers in the area of school accountability and teacher evaluation. *No Child Left Behind* (NCLB), the Bush administration’s iteration of the Elementary and Secondary Education Act (ESEA) introduced a new and more stringent level of federal accountability for schools and districts. Schools are measured regularly and subject to intervention by state government if they are not demonstrating an acceptable level of growth. Following on the heels of this school accountability focus is the development of new rules, regulations, incentives, and sanctions aimed at insuring the quality of teachers (Maine Department of Education, 2011).

With the dawn in 2009 of Race to the Top, the competitive federal educational incentive grants initiated by the Obama administration, more rigorous frameworks for measuring teacher quality began to emerge. Instead of using the term “teacher quality” the term “teacher effectiveness” began appearing in U.S. Office of Elementary and Secondary Education. States were asked to design systems that would measure the effectiveness of their teachers including levels of performance in professional skills and multiple measures of student achievement. If measuring teacher effectiveness has become an important component of school accountability, it is important to know how it is defined and measured. Being involved in policy work at the state level led me to examine the objective and subjective measures of teacher effectiveness. My interest in nonverbal communication motivated me to explore this topic to determine the
relationship between nonverbal communication and students’ perceptions of teachers. As I narrowed the research purpose and studied the literature, my focus narrowed to the effect of NVC on rapport in the classroom.

Administrators, particularly those who conduct evaluations of teachers that include classroom observations, should be aware of the NVC skills that promote both rapport and credibility. The finding that there was no statistically significant relationship between grade level rapport behaviors and whole survey scores in this study should not keep administrators from taking NV skills into consideration when assessing teacher quality, since a large body of literature supports the connection between NV behaviors and rapport. Determining the validity and reliability of the rubric displayed in Figure 5.2 may provide a tool for administrators.

The finding that may be most relevant for administrators is the significant relationship between subjective rankings and student perceptions of rapport. This needs further study, but may lead to changes in how teachers are evaluated through observation. Action research at the district level would provide data that would support or refute this finding. Considering the time required for teacher evaluation, this is an area of study that may elicit interest for administrators (Hult, Lundstrom & Edstrom, 2016).

**Implications for Educator Preparation Programs**

Should educator preparation programs be teaching about the effects of NVC? Participants in this study agreed that these were valuable skills that should be taught. For example, one participant said, “To build those things into courses for teachers would be important I think.” In Maine, educator preparation programs are designed around standards and use rubrics that are part of the teacher evaluation frameworks in the state. Four frameworks that are commonly employed to evaluate effectiveness are: the Interstate Teacher Assessment
Consortium (InTASC) Standards, Charlotte Danielson’s Framework for Teaching, the Marzano Teacher Evaluation Model, and the National Board for Professional Teaching Standards. All four frameworks address the areas of learner development, learning differences, content knowledge, planning, instructional strategies, assessment, professional learning, leadership, and collaboration (Danielson, 1996; Interstate Teacher Assessment and Support Consortium (InTASC) Model Core Teaching Standards: A Resource for State Dialogue, 2011; Marzano, 2005; "National Board for Professional Teaching Standards," 2014). Each framework also addresses the broad category of learning environments. This category includes a number of classroom management elements such as managing classroom procedures, managing student behavior, organizing physical space, and engaging students. An examination of these frameworks also reveals that each addresses the importance of the relationship between teacher and student. As this study focused on rapport, these segments of the evaluation frameworks could be leveraged by educator preparation programs to teach NVC skills.

Relatedness is defined as feeling significantly emotionally connected to others (Ryan & Deci, 2000). All of the evaluation frameworks examined addressed relatedness or rapport using a variety of terms to refer to the relationships between teacher and student. Caring and respect is prominent in a number of frameworks. The InTASC Standards state that “The teacher communicates verbally and nonverbally in ways that demonstrate respect” (Standard 3f), “The teacher collaborates with learners and colleagues to develop shared values and expectations for respectful interactions” (Standard 3c), and “The teacher seeks to foster respectful communication among all members of the learning community” (Standard 3q). The National Board for Professional Teaching Standards states, “Teacher treats all students respectfully and insists that all students treat each other with respect” (Standard 1.3). Danielson’s Framework for Teaching
includes a standard that asks, “To what extent do the interactions between teacher and students, and among students, demonstrate genuine caring and a safe, respectful, supportive, and also challenging learning environment?” (Standard 2a). Finally, Marzano’s Teacher Evaluation Model evaluates whether a teacher “Exhibits behaviors that demonstrate value and respect for low expectancy students and monitors for evidence of the impact on the majority of students” (DQ 9).

Being responsive and building relationships are elements shared within some of the frameworks examined. The InTASC Standards state, “The teacher is a thoughtful and responsive listener and observer” (Standard 3r), “The teacher reflects on his/her personal biases and accesses resources to deepen his/her own understanding of cultural, ethnic, gender, and learning differences to build stronger relationships and create more relevant learning experiences” (Standard 9e), and “The teacher makes learners feel valued and helps them learn to value each other” (Standard 2n). Marzano’s Teacher Evaluation Model states, “The teacher uses students’ interests and background to produce a climate of acceptance and community” (DQ8).

So, having established that the evaluation frameworks address rapport in some way, determining how prominent relatedness is in the evaluation frameworks is important. The four frameworks were examined to determine the percentage of weight given to rapport in each. The percentage of the frameworks measuring rapport behaviors is between 5 – 13.6% of the four evaluation frameworks, with the average of 8.5%. It is clear that building and maintaining respectful, caring relationships with students and creating positive and safe learning environments is a feature of all of the frameworks examined. Rapport is not given much relative weight, but the standards do address it, providing a starting point for educator preparation
programs. Again, determining the validation and reliability of the proposed rubric in Figure 5.2 could yield a tool that Educator Preparation programs could offer to the field.

**Implications for Researchers**

One should proceed with caution in drawing conclusions from this study. Analysis with a larger population may confirm or refute these findings. Further research to determine the relationship between K-12 teachers’ NVC skills and student perceptions of rapport would help to reconcile the discrepancies between these findings and the extensive body of literature that refutes these findings. A larger population of teachers using each form of the survey would result in more robust data. Comparing factors such as teacher gender, years of experience, rural/urban school communities, and socio-economic diversity may reveal salient trends that were not addressed in this study involving all female teachers in the same district. Finally, creating or revising surveys to increase their internal reliability would strengthen findings.

This study fills gaps in education communication research in two primary ways. First, it augments existing quantitative research by identifying and analyzing teachers’ awareness of NVC using a qualitative approach. Secondly, it enriches research by widening the scope from studies that focus mostly on college instructors to teachers in grades K – 12. Studying this topic in grades K – 12 schools in the 21st century could inform meaningful reform efforts that might influence practice. Although not offering strong recommendations for practice, this study creates a framework that contributes to further research.

This study provides some instruments and methods that could be used in other studies to enlarge the scope of findings and produce research that provides evidence of stronger relationships. This study provides the foundation for multiple paths of future research.
First, enlarging the N size at each grade level grouping would provide more valid and reliable data. The methods could be duplicated, but would provide more reliable data analyses if ten or fifteen teachers at one grade level grouping participated. In addition, with a larger and more diverse participant set, comparing factors such as teacher gender, years of experience, rural/urban school communities, ethnic diversity, and socio-economic diversity could result in more multifaceted findings.

Another research pathway could spring from this study examining the effectiveness of teaching NVC behaviors by administering pre and post-test to participants to determine whether learning and consciously using these NVC skills results in improved student perceptions of rapport. Similar studies could include negative NV behaviors that create barriers to rapport. Would a decrease in these behaviors result in improvements in student perceptions of rapport?

Since one of the most significant correlations in this study was between the researcher’s field-based pre-analytic ratings and student perceptions of rapport, continuing research in this area is warranted. A similar research method could be employed with the addition of more observers who ranked the participants using an instrument (either create or put in Danielson rubric). If this finding is supported, it could provide a valuable tool to provide feedback to teachers in an area that they value. As one participant stated,

We really need to relate to the kids because if we can't relate to them, we're not gonna get them to do the best that they can do. Part of motivating them obviously is everything you do, not just what I'm saying but everything that I'm actually doing. I guess it's more important looking at this than I thought.
Increasing the number of subjective raters to determine a relationship between subjective ratings and student perceptions of rapport may influence how evaluations are carried out in school districts.

Another research area that could yield recommendations for practice is the study of NVC skills as part of the Educator Preparation curriculum. Although comprising only a small percentage of the focus in the major teacher evaluations instruments used in Maine, NVC is included in the work of Danielson and Marzano and in the InTASC Standards that are the foundation of all Educator Preparation programs in Maine. Research questions that could be explored include: 1.) Are Educator Preparation programs teaching NVC skills?, 2.) Are Educator Preparation programs assessing teacher candidates on NVC skills?, 3.) Would Educator preparation programs consider putting more emphasis on NVC skills?, and 4.) Would candidates who were trained in NVC be more skillful in developing rapport than those who were not? Since college students are a particularly available group of study subjects, this avenue of research may be one of the easiest to pursue.

Continuing research on NVC skills’ effect on cognitive outcomes would be a final area ripe for future research. Most of the literature classifies cognitive outcomes as secondary, but with the current emphasis on social-emotional skills and how these impact cognitive performance, correlating NV skills with academic achievement could lead to some relevant and timely findings. Despite the need for further research, this study adds to knowledge of the effect of NVC skills in K-12 classrooms and provides a foundation for a research agenda focusing on NVC and its effect on rapport.

In summary, this study concludes that there is evidence in the literature that NVC skills contribute to rapport in the classroom. Results of this study do not support that conclusion, but
Secondly, rapport is important to K-12 Teachers. Teachers do engage in a broad spectrum of NV behaviors that promote rapport, but are aware of only a fraction of the NV skills they use. However, teachers’ awareness of their NVC skills does not correlate with observed NV behaviors or student perceptions of rapport. Teachers exhibited higher awareness of parakineti

Another conclusion of this study is that subjective rankings are a significant predictor of student perceptions of rapport. If this proves to be true in future studies with larger samples and a more diverse group of researchers, it could affect teacher evaluation practices.

**Conclusion**

This study set out to measure the impact of NVC teacher behaviors on student perceptions of rapport and to determine which of these behaviors were conscious. The NV behaviors of teachers were quantified and their effect on student perceptions of rapport was measured. The mixed-methods parallel convergent methodology contributed to a rich collection of data that was analyzed using multiple strategies. In this method, qualitative approaches reflect the participants’ perceptions and values and quantitative approaches inform those perceptions and values. Together the two methods of this phenomenological approach provided robust data that are authentic and relevant to teachers (Glesne, 2011; Seidman, 2013).

The literature provides extensive evidence that NVC behaviors contribute to student perceptions of rapport. Evidence is particularly robust at the college level (Andersen, 1980; Finn et al., 2009; McCroskey et al., 1995). Battey (2013) emphasized the importance of including relational aspect in classrooms. NVC skills of teachers are a significant element building rapport between teacher and student (Tickle-Degnen & Rosenthal, 1990; Nelson, Grahe, & Ramseyer, 2016).
Most of the findings in this study were unexpected in that they did not parallel the extensive research on NVC in the classroom. One primary factor can explain this. Once it was determined that the aggregate data did not yield any significant relationships, data was separated into grade spans. This resulted in an already small N (6) size for the study becoming even smaller (N=2). Statistical analysis with a small N size is less reliable. Nevertheless, because the grade span analysis approached significance, so a direction for future research is indicated.

This study resulted in multiple findings. The teachers in this study shared a wide variety of NV behaviors that research has determined contribute to rapport, although with varying levels of awareness. The level of awareness did not have an impact on student perceptions of rapport, consistent with Pentland and Heibeck’s (2010) study. Finally, although the researcher’s field-based pre-analytic ranking were significantly correlated with student perceptions of rapport, teachers’ NV behaviors did not quite yield significant results when correlated with perceptions of rapport.

This study contributes valuable findings to the scientific community having been conducted in K–12 schools. The need for K-12 studies in NVC was confirmed by the discovery that less research on NVC has been conducted in K-12 school settings than in college settings. In searching multiple databases such as Academic Search Complete, ERIC, and PsycINFO, there were less than ten applicable articles at the high school level and fewer at the elementary school level.

There is a strong research foundation indicating that nonverbal communication has an effect on student perceptions of rapport. Although this study failed to find significant correlations between NV behaviors and rapport, this was likely due to weaknesses in the methods, particularly the N size used to correlate factors with each version of the survey. The study did
unveil some interesting findings that could provide direction for future research including the significant correlation between the researcher’s pre-analytic ratings and student perceptions of rapport and the finding that teachers are aware of only a fraction of the parakinetic NV behaviors they are using. These findings provide a launching point for additional research that demonstrates the significance of NV behavior in promoting rapport in the K – 12 classroom.
REFERENCES


154


Zoller, K. (2007). *Nonverbal patterns of teachers from five countries:Results from the TIMSS-R observation study*. Retrieved from Davis:


Appendix A

Informed Consent – Teacher

You are invited to participate in a research project being conducted by Barbara Moody, doctoral student in the Educational Leadership Program at the University of Maine. The faculty sponsor is Dr. Ian Mette, Assistant Professor of Education. The purpose of the research is to better understand the communication skills of teachers and how this might contribute to building rapport in the classroom and lead to student success.

What Will You Be Asked to Do?

You will be asked to grant permission to be observed three times for one hour each time. While observing, the researcher will videotape your teaching. The purpose of this is to be able to identify your communication skills in the classroom. You will also be asked to participate in two forty-five minute to one-hour interviews asking about your views on your own communication practices and their effect on affective and cognitive outcomes for students.

Risks

You may be uncomfortable having the researcher observe you and/or being videotaped. Although attempts will be made to highlight best practices, data may indicate areas for improvement.

Benefits

The main benefit to your participation is the insight you will gain from a systematic and detailed study of your communication skills. Additionally, you will make a contribution to the field so other teachers can improve their ability to connect with students, which makes the school experience better.

Confidentiality

You will not be personally identified in any report of these findings, other than being identified as a Maine teacher in a large district. Only the researcher will observe you in the classroom, view the videotapes, and view interview transcripts. You will receive a summary of findings about your data as well as the complete research results upon completion of the study. The research data, including observation notes, videotapes, and recorded interviews will be kept on a secure, password-protected computer.

Voluntary

As stated previously, participation is voluntary. If you choose to take part in this study, you may withdraw your permission at any time.

Contact Information

If you have any questions about this study, please contact the researcher or faculty sponsor at the information listed below:
Barbara Moody
Chair, School of Education at Husson University
Doctoral Student at the University of Maine
207-992-4988
moodyb@husson.edu

Dr. Ian M. Mette
Assistant Professor of Educational Leadership
University of Maine
334 Merrill Hall
(207) 581-2733
ian.mette@maine.edu

If you have any questions about your rights as a research participant, please contact Gayle Jones, Assistant to the University of Maine’s Protection of Human Subjects Review Board, at 581-1498 (or e-mail gayle.jones@umit.maine.edu).

____________________________________  __________________
Signature of Participant                Date
Appendix B

Interview Protocols

Interview Protocol # 1

1. What is your personal definition of communication competence?

2. Upon what do you base this definition?

3. What are the significant elements of instructional communication?

   a. What role does knowledge play in communication competence?
      1. What does a teacher need to know?
      2. What areas of knowledge important to effective instruction? If so, what? Why?

   b. What role does motivation play in communication competence?
      1. To what degree does one’s concern about teaching well impact effective communication?

   c. What role does skill play in instructional communication competence?
      1. What kinds of skills does one need to communicate effectively?
      2. Why are these important?

   d. What role does verbal communication play in communication competence?
      1. To what degree does facility with language or oral expression matter to
teaching well?

2. In what situations is verbal communication most effective?

e. What role does nonverbal communication play in communication competence?

1. What function does nonverbal communication play in effective communication?

2. In what situations is NVC most effective?

f. What role does interpersonal communication play in communication competence?

1. How much should a teacher focus on comfortably appropriate personal relationships with students?

4. How do you know whether you are competent in communication? How do you evaluate competence in communication from the teacher’s point of view?

5. How do students indicate that you are communicating well with them? What signs or signals do you draw upon from students to evaluate whether you are competent as a communicator?

6. How would you describe the climate that you try to create in your classroom?

   a. How do both you and your students play a role in creating that climate?

      1. What behaviors do you enact to try and influence your classroom climate?

      2. What behaviors do you see students enact that influences class climate?

7. Can you describe the best teacher that you have had?

   Adapted from Worley, Titsworth, Worley & Cornett-DeVito, 2007
Interview Protocol # 2

1. Has your personal definition of communication competence changed?

2. Upon what do you base this change?

3. Based on the data presented, what are the significant elements of instructional communication?

   a. Based on the data presented what role does knowledge play in communication competence?
      1. What does a teacher need to know?
      2. What areas of knowledge important to effective instruction? If so, what? Why?

   b. Based on the data presented, what role does motivation play in communication competence?
      1. To what degree does one’s concern about teaching well impact effective communication?

   c. Based on the data presented, what role does skill play in instructional communication competence?
      1. What kinds of skills does one need to communicate effectively?
      2. Why are these important?

   d. Based on the data presented, what role does verbal communication play in communication competence?
1. To what degree does facility with language or oral expression matter to teaching well?

2. In what situations is verbal communication most effective?

e. Based on the data presented, what role does nonverbal communication play in communication competence?

1. What function does nonverbal communication play in effective communication?

2. In what situations is NVC most effective?

f. Based on the data presented, what role does interpersonal communication play in communication competence?

1. How much should a teacher focus on comfortably appropriate personal relationships with students?

4. Do you now have a better understanding about whether you are competent in communication? How would you now evaluate competence in communication from the teacher’s point of view?

Adapted from Worley, Titsworth, Worley & Cornett-DeVito, 2007
Appendix C

Informed Consent – District

Your district has been invited to be part of a research project conducted by Barbara Moody, a doctoral student at the University of Maine. The faculty sponsor is Dr. Ian Mette, Assistant Professor of Education. The purpose of the research is to better understand the communication skills of teachers and how this might contribute to building rapport in the classroom and lead to student success.

What Will You Be Asked to Do?

You will be asked to grant access to the MSFE climate survey data for the students of participating teachers. No student names will be needed for this data.

Risks

Releasing these data risks that it could become public. All data will be kept confidential and will be kept on a secure, password protected computer.

Benefits

The benefit to your participation is that the research might help participating teachers improve their practice, and give other teachers valuable information about how to communicate with their students. Additionally, you will receive information about the reliability and validity of the MSFE survey.

Confidentiality

Your district will not be identified in any report of these findings. Only the researcher will view the raw data. The teacher will get a summary of the data from his/her classroom. The research data, including observation notes, videotapes of lessons, and recorded interviews will be kept on a secure, password-protected computer.

Voluntary

As stated previously, participation is voluntary. If your district chooses to take part in the research, you can remove permission at any time.

Contact Information

If you have any questions about this study, please contact the researcher or faculty sponsor, Dr. Ian Mette, using the information listed below:

Barbara Moody
Chair, School of Education at Husson University
Doctoral Student at the University of Maine
207-992-4988
moodyb@husson.edu
Dr. Ian M. Mette
Assistant Professor of Educational Leadership
University of Maine
334 Merrill Hall
(207) 581-2733
ian.mette@maine.edu

If you have any questions about your rights as a research participant, please contact Gayle Jones, Assistant to the University of Maine’s Protection of Human Subjects Review Board, at 581-1498 (or e-mail gayle.jones@umit.maine.edu).

____________________________________  ____________________
Signature of District Representative  Date
Appendix D

Observation Table Containing the 22 Nonverbal Patterns
*Yellow highlighted behaviors indicate those promoting credibility*
*Green highlighted behaviors indicate those promoting rapport*

<table>
<thead>
<tr>
<th>#</th>
<th>Pattern</th>
<th>Code Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Self talk – gesture to self</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Teacher to student/class talk – gesture to student or class</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Teacher to object talk (concrete or abstract) – gesture to board/lab/book/location other than a person</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Teacher to outside the room – gesture outside room</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Voice pattern – flatter/less rhythmic</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Voice pattern – rhythmic</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Voice speed – increase from baseline</td>
<td>7SD, 7SI, 7VD, 7DI</td>
</tr>
<tr>
<td>8</td>
<td>Voice speed – decrease from baseline</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>Loud-silent-softly (relative to baseline)</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>Frozen hand gesture, including beats</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>High expectation: still body, direct eye contact when making point</td>
<td>11</td>
</tr>
<tr>
<td>12</td>
<td>Low expectation: Moving body, indirect eye contact when making a point</td>
<td>12H, 12L</td>
</tr>
<tr>
<td>13</td>
<td>High respect: still body, direct eye contact when listening to student</td>
<td>13</td>
</tr>
<tr>
<td>14</td>
<td>Low respect: moving body, indirect eye contact when listening to student</td>
<td>14</td>
</tr>
<tr>
<td>15</td>
<td>When pausing, teacher is still</td>
<td>15</td>
</tr>
<tr>
<td>16</td>
<td>When pausing, teacher is moving</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Breathing high in the chest</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----------------------------</td>
<td>---</td>
</tr>
<tr>
<td>17</td>
<td>Breathing low in the abdomen</td>
<td>18</td>
</tr>
<tr>
<td>18</td>
<td>Voice flat while breathing high</td>
<td>19</td>
</tr>
<tr>
<td>19</td>
<td>Voice flat while breathing low</td>
<td>20</td>
</tr>
<tr>
<td>20</td>
<td>Voice rhythmic while breathing high</td>
<td>21</td>
</tr>
<tr>
<td>21</td>
<td>Voice rhythmic while breathing low</td>
<td>22</td>
</tr>
<tr>
<td>22</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The 22 patterns are modified from Grinder (1997).

Zoller (2007)
Appendix E

Surveys

High School Survey

(Highlighted items make up rapport construct)

4- Strongly Disagree  3- Disagree  2- Agree  1-Strongly Agree  0-Not Sure

1- In this class, I have options to demonstrate my knowledge (i.e., write a paper, make a video, design a poster).
2- When I struggle, my teacher gives me alternate opportunities for success.
3- My teacher provides me with opportunities to extend my learning.
4- When appropriate, my teacher provides options to work on topics that interest me.
   (i.e.: While studying biomes, I get to choose the climate I will use to demonstrate my understanding.)
5- The work in this class is challenging but not too difficult for me.
6- I can show my learning in many ways (i.e. writing, graphs, pictures).
7- My teacher uses a variety of ways, and not just worksheets, to help me learn (i.e.: pictures/visuals, role plays/discussions, use slideshows, write on board, play games).
8- My teacher expects me to respect other points of view in this class.
9- In my class, my teacher is interested in how I am doing with more than just my classwork.
10- My teacher believes in my abilities.
11- My teacher brings positive energy to class regardless of outside influences and/or any personal issues he/she is dealing with.
12- I feel comfortable asking questions in class.
13- I am expected to support my answers or reasoning in this class
14- The activities in this teacher’s class require me to think analyze, and evaluate.
15- Students respectfully challenge each other’s thinking in class
16- My teacher encourages me and my classmates to challenge each other’s opinions respectfully during class discussions.
17- My teacher can break down challenging material so that we can understand it better.
18- My teacher uses a variety of instructional approaches (i.e. videos, models, technology) to help me learn.
19- During lessons, I can make connections/relate what I have learned to experiences I have had during my lifetime.
20- My teacher asks us to summarize what we have learned in a lesson.
21- My teacher starts class with telling us what he/she wants us to learn.
22- My teacher tells me what the purpose/reason of each lesson is.
23- I can explain what I am learning.
24- Classroom rules/expectations are well established.
25- My teacher enforces classroom rules/expectations consistently.
26- I am able to work independently or in small groups in the class.
27- My teacher’s passion for this subject makes me want to learn more.
28- In this class, students work together to help each other learn difficult content.
29- In this class, my teacher makes learning interesting.
30- My teacher checks to make sure we understand what he or she is teaching us.
31- My teacher gives us timely feedback on our assignments and assessments.
32- The feedback my teacher provides helps me better understand what we are learning.
33- My teacher is quick to change how he or she is teaching if the class does not understand (i.e., switch from using written examples to using diagrams or provide a variety of other examples).
Middle School Survey

(Highlighted items make up rapport construct)

4- Strongly Disagree  3- Disagree  2- Agree  1-Strongly Agree  0-Not Sure

1. The activities in this teacher’s class require me to think deeply.
2. My teacher believes in my abilities.
3. My teacher asks us to summarize what we have learned in a lesson.
4. Students respectfully challenge each other’s thinking in this class.
5. The rules and expectations in this class are clear.
6. My teacher asks me to improve my work when I can do better.
7. My teacher checks to make sure we understand what he or she is teaching us.
8. My teacher asks questions that make me think about multiple possible answers.
9. In this class, my teacher makes learning interesting.
10. I can explain what I am learning.
11. After I get feedback from my teacher, I know how to make my work better.
12. The work in this class is challenging but not too difficult for me.
13. My teacher uses students’ ideas to help students learn.
14. During our lessons, I apply what I have learned to new types of challenging problems or tasks.
15. My teacher tells me in advance how my work is going to be assessed.
16. My teacher can break down challenging material so that we can understand it better.
17. The material in this class is clearly taught.
18. In this class, students are encouraged to work together to help each other learn difficult content.
19. I am expected to use evidence to support answers or reasoning.
20. My teacher is quick to change how he or she teaches if the class does not understand (for example, switch from using written explanations to using diagrams).
21. My teacher handles it respectfully when students misbehave.
22. We show our understanding in multiple ways (for example, projects, papers, presentations).
23. The teacher and students respect each other in this class.
24. My teacher gives us quick feedback on our assignments.
25. My teacher uses a variety of ways to help all students learn (such as draw pictures, talk out loud, use slides, write on board, play games).
26. I feel comfortable asking for help from my teacher.
27. I feel like my teacher cares about me.
Grade 3 – 5 Survey
(Highlighted items make up rapport construct)

1. Students help decide the rules for how students should behave in class.
2. My teacher believes in my abilities.
3. My teacher asks us to summarize what we have learned in a lesson.
4. Students respectfully challenge each other’s thinking in this class.
5. The rules and expectations in this class are clear.
6. My teacher asks me to improve my work when I can do better.
7. My teacher checks to make sure we understand what he or she is teaching us.
8. My teacher asks questions that make me think about multiple possible answers.
9. In this class, my teacher makes learning interesting.
10. I can explain what I am learning.
11. After I get feedback from my teacher, I know how to make my work better.
12. The work in this class is challenging but not too difficult for me.
13. My teacher uses students’ ideas to help students learn.
14. During our lessons, I apply what I have learned to new types of challenging problems or tasks.
15. My teacher tells me in advance how my work is going to be assessed.
16. My teacher can break down challenging material so that we can understand it better.
17. The material in this class is clearly taught.
18. In this class, students are encouraged to work together to help each other learn difficult content.
Barbara M. Moody was born in Brighton, Massachusetts on January 31, 1956. She graduated from St. Mary’s High School in Westfield, Massachusetts and received a B.S. in Psychology with a Minor in Philosophy from St. Michael’s College in Winooski, Vermont in 1978 graduating cum laude. In 1984, she received a M.Ed. in Special Education magna cum laude from the University of Alaska, Anchorage.

Barbara has professional experience in a wide range of educational and government setting. Professional positions held include special education teacher, educational consultant, founder and director of a middle school for the arts, Title II (ESSA) Coordinator for the Maine Department of Education, Chair of the School of Education at Husson University, and Director of Child and Family Services at Midcoast Maine Community Action. Her work also includes educational consulting and grant reviewing for the U.S. Department of Education.

Barbara served as the President of Learning Forward New England from 2011 – 2013. She has served on multiple committees and alliances at the Maine Department of Education and for state and regional organizations. She is currently serving on the Governing Board of the Regional Education Labs of Northeast and the Islands. After receiving her degree, Barbara will continue her position with Midcoast Maine Community Action. She is a candidate for the Doctor of Philosophy degree in Educational Leadership from the University of Maine in December, 2019.