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# Defining and measuring teacher legitimacy

Douglass Martin Drake

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UNIVERSITY OF NORTHERN COLORADO

Greeley, CO

The Graduate School

DEFINING AND MEASURING TEACHER LEGITIMACY

A Dissertation Submitted in Partial Fulfillment  
of the Requirements of the Degree of  
Doctor of Philosophy

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College of Education and Behavioral Sciences  
School of Psychological Sciences  
Educational Psychology

August 2013

This Dissertation by: Douglass Martin Drake

Entitled: *Defining and Measuring Teacher Legitimacy*

has been approved as meeting the requirement for the Degree of Doctor of Philosophy in  
College of Education and Behavioral Sciences in School of Psychological Sciences,  
Program of Educational Psychology

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## **ABSTRACT**

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Power and authority exist in every relationship. The relationship between teacher and student is no exception. Legitimacy is the cornerstone of authority, yet there is a dearth of research into how teacher legitimacy affects the teacher/student relationship. In the current study, I sought to identify characteristics and behaviors teachers exhibit that lead them to be perceived as legitimate by their students. Additionally, I examined the relationship between this perceived legitimacy and student outcomes. Using a sampling frame of military officers at Squadron Officer School in Montgomery, Alabama, I conducted focus groups to gather student perceptions regarding the teacher legitimacy characteristics. Then, using these characteristics, I developed an instrument to measure student perceptions of teacher legitimacy. Finally, I conducted regression analysis on data obtained with this instrument to assess whether perceived teacher legitimacy would significantly explain student outcomes. I hypothesized that after controlling for gender, student education level, instructor experience, and squadron of assignment that teacher legitimacy would significantly explain student outcomes in the form of end-of-course scores and scores on a measure of transformative experience (TE). Only the hypothesis regarding the relationship between teacher legitimacy and score on the TE measure was supported. Results of this study established teacher legitimacy as important to student

outcomes and supported the inclusion of the concept of teacher legitimacy into the curricula of programs designed to educate those who would instruct adult learners.

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## TABLE OF CONTENTS

|         |  |    |
|---------|--|----|
| CHAPTER |  |    |
| I.      | INTRODUCTION .....                               | 1  |
|         | Background .....                                 | 2  |
|         | Rationale for the Study .....                    | 5  |
|         | Theoretical Framework .....                      | 7  |
|         | Purpose.....                                     | 7  |
|         | Research Questions .....                         | 8  |
|         | Research Hypotheses .....                        | 9  |
|         | Limitations/Delimitations .....                  | 9  |
|         | Definition of Terms.....                         | 11 |
|         | Previous Study .....                             | 11 |
|         | Summary .....                                    | 12 |
| II.     | REVIEW OF LITERATURE .....                       | 13 |
|         | Power .....                                      | 13 |
|         | Classic Power Theory .....                       | 14 |
|         | Base, Means, Scope, and Amount of Power .....    | 15 |
|         | Power of Mutual Dependence.....                  | 17 |
|         | Bases of Power.....                              | 20 |
|         | Comprehensive Classes of Power 2.....            | 24 |
|         | Summary .....                                    | 26 |
|         | Power by a Different Name— Social Control .....  | 27 |
|         | Rational and Internal Motives.....               | 28 |
|         | Currencies of Power.....                         | 30 |
|         | Command-and-Control Versus Self-regulation ..... | 32 |
|         | Summary .....                                    | 33 |
|         | The Power in the Classroom Study Series .....    | 33 |
|         | Power II.....                                    | 34 |
|         | Power III .....                                  | 35 |
|         | Power IV .....                                   | 35 |
|         | Power V .....                                    | 35 |
|         | Power VI.....                                    | 36 |

## CHAPTER

### II. continued

|  |    |
|--|----|
| Power VII.....   | 36 |
| Power and Motivation.....                                    | 37 |
| Summary .....  | 37 |
| Authority .....  | 38 |
| Classic Authority Theory.....                                | 38 |
| A Duty to the Moral Order.....                               | 40 |
| Rationality.....   | 41 |
| Subordinates' Perception of the Authority Relationship ..... | 43 |
| Summary .....  | 44 |
| Authority in the Classroom.....                              | 45 |
| Swinging the Balance .....                                   | 45 |
| A Different Perspective.....                                 | 46 |
| Summary .....  | 49 |
| Legitimacy .....   | 50 |
| Explaining Legitimacy.....                                   | 51 |
| Gaining Legitimacy .....                                     | 51 |
| Effects of Legitimacy.....                                   | 53 |
| Summary .....  | 56 |
| Legitimacy in the Classroom .....                            | 56 |
| Transformative Experience .....                              | 57 |
| Summary .....  | 59 |
| III. METHOD .....  | 61 |
| Previous Study .....   | 61 |
| Participants.....  | 62 |
| Instruments.....   | 63 |
| Focus Group Protocol .....                                   | 63 |
| Characteristics of Legitimate Teachers Survey .....          | 63 |
| Data Analysis .....  | 64 |
| Focus Group Data .....                                       | 64 |
| Survey Data.....   | 64 |

## CHAPTER

### III.

continued

|   |     |
|---|-----|
| Results.....  | 64  |
| Focus Groups .....  | 64  |
| Survey.. .....  | 64  |
| Current Study .....   | 65  |
| Participants.....   | 65  |
| Instruments.....  | 69  |
| Generating Items .....  | 69  |
| Instrument Development.....                                       | 70  |
| Student Outcomes .....  | 72  |
| Validating Scores on the Teacher Legitimacy Scale .....           | 73  |
| Data Analysis .....   | 75  |
| Rasch Analysis of the Teacher Legitimacy Scale.....               | 75  |
| Exploratory Factor Analysis of the Teacher Legitimacy Scale.....  | 76  |
| Confirmatory Factor Analysis of the Teacher Legitimacy Scale..... | 77  |
| Concurrent and Discriminant Validity.....                         | 78  |
| Multiple Regression.....  | 79  |
| Regression Diagnostics .....                                      | 82  |
| Summary .....   | 90  |
| IV. RESULTS .....   | 92  |
| Participants.....   | 92  |
| Research Question 1 .....   | 93  |
| Pilot Study.....  | 96  |
| Reliability.....  | 97  |
| Validity .....  | 98  |
| Research Questions 2 and 3 .....                                  | 103 |
| Reliability.....  | 104 |
| Validity .....  | 104 |
| Confirmatory Factor Analysis.....                                 | 106 |
| Assumptions.....  | 108 |

|         |  |     |
|---------|--|-----|
| CHAPTER |  |     |
| IV.     | continued  |     |
|         | Outliers.....  | 109 |
|         | Collinearity .....   | 110 |
|         | Regressions .....  | 110 |
|         | Summary .....  | 114 |
| V.      | DISCUSSION .....   | 117 |
|         | Summary and Discussion of Research Findings.....                     | 117 |
|         | Research Questions 1 and 1a .....                                    | 118 |
|         | Teacher Legitimacy Characteristics.....                              | 118 |
|         | Pilot Study.....   | 122 |
|         | Research Questions 2 and 3 .....                                     | 123 |
|         | Final Survey .....   | 124 |
|         | Implications of Research Findings.....                               | 128 |
|         | Theoretical Implications .....                                       | 128 |
|         | Practical Implications.....  | 129 |
|         | Limitations of the Study.....  | 130 |
|         | Recommendations for Future Studies .....                             | 132 |
|         | Summary .....  | 133 |
|         | REFERENCES .....   | 134 |
|         | APPENDICES   |     |
| A.      | Teacher Legitimacy Survey Used in Previous Study .....               | 145 |
| B.      | Institutional Review Board Approval Letter.....                      | 149 |
| C.      | Squadron Officer College Commander's Endorsement<br>Memorandum ..... | 151 |
| D.      | Focus Group Protocol .....   | 153 |
| E.      | Initial Teacher Legitimacy Scale .....                               | 155 |
| F.      | Final Teacher Legitimacy Survey .....                                | 159 |
| G.      | Original Transformative Experience Measure.....                      | 163 |

|    |  |     |
|----|--|-----|
| H. | SOS Transformative Experience Measure.....                                       | 165 |
| I. | Teacher Caring Scale .....   | 167 |
| J. | Detailed Summaries of Regressions Run Without Possibly<br>Influential Cases..... | 169 |

## LIST OF TABLES

|       |   |
|-------|---|
| Table |   |
| 1.    | Common Effective Teacher Traits .....4  |
| 2.    | Demographic Data for Squadron Officer School Class 13C and Study<br>Participants.....66   |
| 3.    | Participants’ Ages and End-of-Course Scores .....93   |
| 4.    | Teacher Legitimacy Characteristics from Focus Group Interviews .....95  |
| 5.    | Exploratory Factor Analysis Rotated Factor Pattern—Two Factor<br>Model .....100   |
| 6.    | Exploratory Factor Analysis Factor Pattern—One Factor Model .....101  |
| 7.    | Inter-correlations of the Measures Used in the Current Study .....106   |
| 8.    | Confirmatory Factor Analysis for the Teacher Legitimacy Model .....107  |
| 9.    | Reliability Estimates .....108  |
| 10.   | Outlier Statistics.....110  |
| 11.   | Hierarchical Multiple Regression Analysis: Scores on the Teacher<br>Legitimacy Scale Explaining End-of-Course Scores.....112  |
| 12.   | Hierarchical Multiple Regression Analysis: Scores on the Teacher<br>Legitimacy Scale Explaining Scores on the Transformative<br>Experience Measure.....115                            |
| 13.   | Hierarchical Multiple Regression Analysis: Scores on the Teacher<br>Legitimacy Scale Explaining Scores on the Transformative<br>Experience Measure, Case 4 Removed.....170            |
| 14.   | Hierarchical Multiple Regression Analysis: Scores on the Teacher<br>Legitimacy Scale Explaining Scores on the Transformative<br>Experience Measure, Cases 4, and 304 Removed .....171 |

Table

|     |  |     |
|-----|--|-----|
| 15. | Hierarchical Multiple Regression Analysis: Scores on the Teacher Legitimacy Scale Explaining Scores on the Transformative Experience Measure, Cases 4, 44, and 304 Removed ..... | 172 |
|-----|--|-----|

## LIST OF FIGURES

Figure

1. Parallel Analysis of Pilot Study Teacher Legitimacy Data ..... 99

## **CHAPTER I**

### **INTRODUCTION**

Teachers make a difference in the classroom. Teachers who interact with students with caring, enthusiasm, helpfulness, and preparedness (and many other identified effectiveness characteristics) have positive effects on student learning (Feldman, 1976; Lowman, 1996; Plax & Kearney, 1992; Richmond & McCroskey, 1984). Another aspect of teachers' interactions with students in the classroom is the use of power, or influence, to create an atmosphere conducive to learning. Teachers who use power appropriately also have a positive effect on student learning (Plax & Kearney, 1992; Richmond & McCroskey, 1984). For teachers to achieve positive authority relationships with students, students must fully support their teachers' use of power. This support comes in many forms, but generally can be summed up as students' perceptions that it is right or just for teachers to make rules and set policies that govern classroom conduct, and therefore the environment of learning (Metz, 1978). This perception is known as legitimacy. Legitimacy is the cornerstone of teachers' ability to use influence in a classroom and therefore, I propose, a necessary but not sufficient part of effective teaching that leads to student learning. The current study examines student perceptions of teacher legitimacy and the relationship between those perceptions and student outcomes.

## **Background**

The Coleman report (Coleman et al., 1966), a product of a Civil Rights Act of 1964 survey, was published by the U.S Department of Health, Education, and Welfare, Office of Education, and looked into the availability of equal educational opportunities for minority groups. Additionally, the report detailed the relationship between students' achievement and the kind of schools they attend. To this end, the report essentially said schools (and by extension teachers) matter very little, but that the student's background and social context have the greatest impact on achievement. Although the accuracy of the Coleman report is questioned by some, there is no arguing the impact it had on educational research. The somewhat shocking conclusion drove a great number of studies examining whether teachers and schools matter and just what characteristics and qualities make teachers effective.

For example, Strauss and Sawyer (1986) conducted a study of the effect of teacher quality, as measured by scores on the National Teacher Exam, on student failure rates on the North Carolina reading and mathematics competency exams. They found that teachers do matter. In fact, after controlling for race, class size, number of teachers, and post-high school educational intentions, they found teachers matter a great deal; according to their research, a one percent increase in teacher quality, as they measured the construct, equaled a five percent decline in the failure rate on the reading and math competency exam. Strauss and Sawyer (1986) called the difference made by teacher quality "enormous" (p. 47) and went on to say that improving the quality of teachers would do more for those students who needed it most than other options available to policy makers.

Also, Sanders and Rivers (1996) found that not only do teachers have an effect on their students' achievement, but that the effects are cumulative. They used the Tennessee Value-Added Assessment System (TVAAS) database to examine estimates of cumulative teacher effects in mathematics on third through fifth graders. They found that the difference between fifth graders who had been placed with low-effectiveness teachers all three years (third through fifth grade) and those who had been placed with high-effectiveness teachers all three years was 52 percentile points. The mean for the *low-low-low* sequence students (740.2) was in the 44<sup>th</sup> percentile while the mean for the *high-high-high* students (784.9) was in the 96<sup>th</sup> percentile. These students benefitted greatly from continued exposure to higher quality teachers (Sanders & Rivers, 1996).

Using a different methodology to examine the TVASS database, Wright, Horn, and Sanders (1997) also found the teacher effect highly significant. Based on their results, they emphatically stated that “the most important factor affecting student learning is the teacher” (p. 63). Finally, Nye, Konstantopoulos, and Hedges (2004) examined data from a four-year randomized experiment (teachers and students were randomly assigned to classes) to estimate teacher effects on student achievement. They also found that different teachers have differing abilities to achieve results with their students and suggested that improving teachers is a promising strategy for improving student achievement. Interestingly these researchers went on to point out that although their research shows teacher effects are large, it was not successful in identifying those characteristics that make a teacher effective.

However, there has been much work done looking into what characteristics make up an effective teacher (see, for example, Feldman, 1976; Reynolds & Elias, 1991,

Stronge, 2007). Some of this work has generated lists of personality and/or behavioral traits, the possession of which could make a person a very good teacher. For example, Feldman (1976) published a synthesis of research on college students' views of what makes an effective teacher. Lowman (1996) analyzed over 500 teacher award nomination forms and found that 39 words appeared 10 times or more. These 39 words fell under four categories. And finally, Berg and Lindseth (2004) used a questionnaire to prompt students to identify characteristics that could be used to label faculty as effective or ineffective. Through a look at the lists of characteristics generated by these studies, it is relatively easy to identify some common traits teachers should possess in order to be effective. I have summed up these common traits in Table 1.

Table 1

*Common Effective Teacher Traits*

| Feldman (1976)            | Lowman (1996) | Berg and Lindseth (2004)                             |
|---------------------------|---------------|--|
| Knowledgeable             | Knowledgeable | Knowledgeable  |
| Enthusiasm                | Enthusiastic  | Likes Teaching                                       |
| Concern W/ Class Progress | Concern       | Concerned  |
| Respect for Students      | Respectful    | Treats Students W/ Respect                           |
| Clear                     | Clarity       | Reviews Expectations Clearly                         |
| Availability              | Available     | Holds Office Hours, Willing to Meet Outside of Class |
| Fairness                  | Fair          | Treats Students Fairly                               |

It is evident that, regardless of what the Coleman report may have said, teachers matter. There is also research that has purported to have identified characteristics of teachers that make them matter. A brief examination of the seven teacher effectiveness characteristics in Table 1 reveals a trend. All of the characteristics speak directly to the teacher/student relationship. Each has to do with how teachers relate to their students. Indeed, each speaks to different types of influence teachers have with students. One shortcoming of the research discussed above however, is that these studies fail to consider the relationship or social setting in which their respective teachers and students operate. Social scientists such as Weber (1947/1964), Dornbusch and Scott (1975), Metz (1978), Wilson (1992), and Pace and Hemmings (2007) would insist that any research done into effective teaching would have to include the social setting and the relationship that forms between teacher and student. Specifically, these researchers would have us consider the power relationship affecting the influence teachers have over students. As Metz (1978) pointed out, teachers have to balance dual and often conflicting roles: they must educate the children in their classrooms while maintaining the order necessary to do so. This delicate balance requires positive power relationships. To further emphasize this point Pace and Hemmings (2007) asserted “a good education simply is not possible without classroom authority relations that promote learning” (p. 22). The current study delved further into the bases for the types of influence teachers have with students.

### **Rationale for the Study**

Researchers have suggested for some time that power relationships exist in nearly all social settings (Dornbusch & Scott, 1975; Weber, 1947/1964). The classroom is no exception. Additionally, the relationship between power and authority has been well

established (Metz, 1978; Weber, 1949/1964). As noted above, there is foundational premise about the importance of authority relations to the educational setting. This premise is supported by a number of studies that examined the relationship between the use of power/authority and student outcomes such as cognitive and affective learning (Richmond & McCroskey, 1984; Richmond, McCroskey, Kearney, & Plax, 1987) and motivation (Richmond, 1990). Each of these studies found positive relationships between the use of non-coercive or soft power and higher student outcomes.

The efficacy of authority relationships in the educational setting is, thus, well-researched. Where the research falls short, however is in the conceptualization of classroom authority. Researchers, and therefore consumers of research, have yet to grasp the full sense of what leads to authority in the classroom (Pace & Hemmings, 2007). What is needed is a “theoretical elaboration of authority, an examination of ideologies that underlie common sense understandings, and the investigation of what really happens inside classrooms as participants interpret and manage forces that shape teacher-student relations” (Pace & Hemmings, 2007, p. 22).

Any such elaboration must begin with the underpinnings of authority. Those underpinnings lie in legitimacy. Many power and authority researchers speak of authority as legitimated power (Benne, 1970; Metz, 1978; Weber, 1947/1964), but seem to take legitimacy as primary. Unfortunately, legitimacy, especially in the case of teachers, cannot be assumed. Legitimacy is only granted through a series of continuous interactions with subordinates (e.g., students, Pace & Hemmings, 2007). Legitimacy researchers have a few theories about what occurs during these interactions that leads to legitimacy (Ford & Johnson, 1998; Tyler, 2006), but very little, if any, of their work has

been done in the classroom. Thus, I proposed to add to the body of knowledge regarding authority relationships in the classroom (as well as legitimacy) by examining teacher legitimacy. Specifically, I examined the characteristics teachers exhibit that give students the perception their teachers are legitimate. Additionally, I examined the relationship between perceived teacher legitimacy and student outcomes.

### **Theoretical Framework**

The framework for this study draws upon previous work done by researchers in the fields of power, authority, and legitimacy as well as that done by educational researchers on the efficacy of certain teacher traits on student outcomes. Principally, these researchers assert over and over again that it is the perception of those *under* authority about those *in* authority that defines the authority relationship (Benne, 1970; Dahl, 1957; Emerson, 1962; Pace & Hemmings, 2007; Tyler, 2006). Therefore, the perceptions of students regarding legitimacy were the foundation for the current study. First, I gathered the perceptions of these students to identify characteristics and behaviors which defined teacher legitimacy. After I used student perceptions to define teacher legitimacy, I developed an instrument that used the characteristics and behaviors identified as a scale with which students could rate their teachers on legitimacy. I then used this perceived legitimacy rating to compare teachers' legitimacy with student outcomes.

### **Purpose**

The ultimate goal of schools and teachers is student learning. There are a number of factors that have been shown to have an impact on learning. Several studies have shown that teachers themselves are an important factor that explains significant differences in student outcomes. Although these studies find differences in the influence

of teachers on student learning, the vast majority of them either cannot or do not identify what characteristics of these teachers lead to the differences. Clearly effective teachers matter, but despite some success (see Table 1) researchers have not been able to conclusively identify specific characteristics that define effective teachers.

Other studies show the use of non-coercive power has a positive bearing on student learning. Specifically, students' perceptions of teachers' use of power and authority have been shown to be positively related to cognitive and affective learning. It is those same students' experiences that determine teachers' legitimacy, define the authority relationship, and therefore dictate how the use of power is perceived. The connection between students' perception of teachers' legitimacy and the effective use of power in classroom is inextricable. Yet there are few, if any studies examining the effect of students' perceptions of legitimacy on student outcomes. Thus, it was necessary to determine how students perceive their teachers as legitimate and whether these perceptions have an effect on student outcomes. The current study did just that. More specifically, the purpose of the current study was to determine what characteristics or behaviors teachers exhibit that gave their students the perception they were legitimate. Further, the current study examined the relationship between perceived teacher legitimacy and student outcomes as determined by end-of-class scores and a measure of student-perceived transformative experience.

### **Research Questions**

To fulfill this purpose, the following research questions were addressed in the current study:

- Q1     What teacher characteristics give students the perception their teachers are legitimate?

- Q1a What behaviors define the teacher characteristics that give students the perceptions their teachers are legitimate?
- Q2 What is the relationship between perceived teacher legitimacy and student outcomes as measured by end-of-class scores, after controlling for squadron of assignment (the unit to which students are administratively assigned during the course), gender, students' previous education, and instructor experience?
- Q3 What is the relationship between perceived teacher legitimacy and student outcomes quantified by a measure of transformative experience after controlling for squadron of assignment, gender, students' previous education, and instructor experience?

### **Research Hypotheses**

Based on the research questions, two hypotheses were set forth. I conducted hierarchical regression analysis to determine what relationship exists between perceived teacher legitimacy and two measures of student outcome.

- H1 Higher perceived teacher legitimacy is associated with more positive student outcomes as measured by end-of-class scores after controlling for squadron of assignment, gender, students' previous education, and instructor experience.
- H2 Higher perceived teacher legitimacy is associated with more positive student outcomes quantified by a measure of transformative experience after controlling for squadron of assignment, gender, students' previous education, and instructor experience.

### **Limitations/Delimitations**

There were limitations and delimitations of the current study that may constrain the generalizability of the results as well as portend some caution in the interpretation of results. The limitation which causes only a discerning interpretation of the results is the use of surveys in gathering data. The problems with self-report methods of data gathering are widely known and these apply to the current study as much as any other. I attempted to lessen the effect of self-report bias by being as vigilant as possible to

violations of privacy and confidentiality during gathering, analysis, and reporting of data and results. In this effort, I hoped to alleviate any fears my participants may have that their responses may be viewed and/or used by anyone outside of the current study. Thus, they were more likely to answer survey items with minimized regard to social desirability.

There were also some delimitations of the current study. The first stemmed from the gender composition of the sampling frame. The sampling frame from my previous study (Drake, 2012) was approximately 80% male. The gender composition of the sampling frame for the current study was similar. I used random selection in the first phase of the current study to gather participants for the focus groups. In phase three of the current study, I interpreted results of regression equations after controlling for gender. Thus, the female under-representation of my sampling frame was negated.

The second delimitation had to do with the sampling frame. I used a sampling frame consisting of United States Air Force officers attending Squadron Officer School at Maxwell Air Force Base in Montgomery, Alabama. As such the sample was representative of a fairly specific population. Aside from the obvious all-military population, the sampling frame was made up of adults, the vast majority of whom were over the age of 27, all of whom had at least a Bachelor's degree, and many of whom had a Master's degree. The sample from the current study also included several participants with Doctoral degrees. Although results of the current study might be fairly generalizable to adult learners (e.g., graduate students), generalization to a broader population of students may be difficult.

### **Definition of Terms**

*Authority.* Authority is power which is legitimated in some fashion by those either subordinate or superordinate to the person attempting to wield it.

*Hard Power.* Those types of influence which involve the use coercive or deterrent (i.e., extrinsic) means to achieve compliance (e.g., the manager threatens the worker with termination if the worker does not meet a quota).

*Legitimacy.* Legitimacy is the perception that the actions of the person or organization in question are just or proper within some system of beliefs or values.

*Power.* The influence, or potential influence, one person (A) has over another (B) that leads B to do something (comply) B would not have otherwise done.

*Soft Power.* Those types of influence which involve the use of non-coercive (i.e., intrinsic) means to achieve compliance (e.g., students comply with a teacher's recommended methods because of his demonstrated knowledge about the subject).

*Subordinate.* For the purpose of this study, a subordinate is any person who is dependent upon another for guidance, rules, leadership, and/or assistance.

*Superordinate.* For the purpose of this study, a superordinate is any person who is appointed to or has the ability to provide guidance, rules, leadership, and/or assistance.

### **Previous Study**

I conducted an initial study into teacher legitimacy in 2012 (Drake, 2012). In that study I developed an instrument used to determine students perceptions regarding the importance of certain characteristics to the concept of legitimacy. The instrument contained 38 items. Thirty of those items were derived from literature on legitimacy and teacher effectiveness. Only eight items came from student perceptions.

As it is the perceptions of those under influence that determine the qualities of the influence relationship, in the current study, I wanted to focus on student perceptions of teacher legitimacy. Since the previously developed instrument used mostly characteristics derived from research and not those from student perceptions, I did not use it in the current study.

Similarly, in the instrument used in my previous study (Drake, 2012) I asked students for their opinions regarding the importance of certain characteristics regarding teacher legitimacy. Although the results of the survey obtained by using this instrument provided support for further examination of the concept of legitimacy, the instrument did not delve into students' perceptions of their current instructors' legitimacy. In other words, it did not ask the questions pertinent to the current study. Therefore, a new instrument was required for the current study.

### **Summary**

This chapter provided the background, the rationale, the theoretical framework, and the purpose of the current study. The research questions and research hypotheses were presented. Finally, limitations of the current study as well as operational definitions of pertinent terms were presented. The next chapter presents a review of literature relevant to the current study.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

This chapter reviews the literature relevant to the current study. Following a discussion of classic theories of power that includes various types of power is a review of research on the efficacy of power in the classroom. The focus of the chapter then turns to a review of the literature on authority as well its use in the classroom. The chapter ends with a detailed discussion of the social phenomenon of legitimacy and its usefulness in producing compliance in various social settings including the classroom. This literature review supports my research questions and hypotheses by illustrating the importance of power, authority, and legitimacy in obtaining optimum results for students.

#### **Power**

In any given group social situation when the group needs to achieve some goal, differences among group members in their abilities to help the group achieve its goal will likely arise. These differences often manifest themselves in the individual abilities group members bring to the task at hand. When one member has a skill or ability no other member has, and that skill becomes critical to goal achievement, a power relationship may form. The member with the needed skill holds some power over the others as they all become dependent on that member for the needed skill and indeed goal achievement. This applies in the classroom setting where the teacher ostensibly has greater knowledge of the subject matter and is depended upon by the students for enabling them to learn that material.

Power, or perhaps the way it is wielded, is often thought of negatively. Historical figures who have gained power and wielded it in destructive ways—Hitler, Stalin, Amin—often come to mind when power is discussed. Even as the discussion turns to the effective and beneficial use of power to achieve necessary ends, it is still difficult to completely wipe those negative examples from our collective minds.

Regardless of how it is conceived, power is a “significant and pervasive social phenomenon” (Dornbusch & Scott, 1975, p. 29). It is “highly comprehensive from the point of view of sociology” (Weber, 1947/1964, p. 153) and “inevitably a part of the accepted phenomena of social psychology” (Cartwright, 1959, p. 2). It is clear that power, in all its forms, is ubiquitous. A discussion of some theories of power follows.

### **Classic Power Theory**

In his timeless work *Wirtschaft und Gesellschaft* originally written in 1947, Weber discussed in great detail his ideas about social and economic organization (Weber, 1947/1964). He expounded on concepts of sociology, categories of economic action, types of authority, and class structure. Of particular interest to the current study is Weber’s theory of power. His definition of power (Weber used the word *macht*) had the greatest influence on social scientists of the 20th century (Dornbusch & Scott, 1975). He defined it as “the probability that one actor within a social relationship will be in a position to carry out his own will despite resistance, regardless of the basis on which this probability rests” (p. 152). Weber considered two other terms important to his discussion of power. The first was *herrschaft*, loosely translated as imperative control (Weber, 1947/1964). Imperative control is the probability that a specific command will be obeyed by a particular group of people. The second term Weber thought important was

discipline. This is the probability that through habit commands are promptly and automatically obeyed by a particular group of people according to norms (Weber, 1947/1964). Weber believed power to be comprehensive. That is, the characteristics of people and the innumerable situations in which they may find themselves will likely place them in a position of power at some point (Weber, 1947/1964). Weber's definition covered the range of power relationships, from a single leader of a large group to one-on-one relationships, known as interpersonal power (Dornbusch & Scott, 1975). This naturally included the classroom, where teachers need to negotiate a power relationship with students. Other researchers have attempted to further elucidate Weber's theory of power. One such researcher was Dahl (1957).

### **Base, Means, Scope, and Amount of Power**

A decade after Weber's influential work, Dahl (1957) published his concept of power. He posited "A has power over *B* to the extent that he can get *B* to do something that *B* would not otherwise do" (pp. 202-203). To simplify his discussion of power, Dahl emphasized that power is relational and that people are involved in the relation. He went on to make his ideas about power more complete by including the *base* of power, the *means* used to exercise power, the *scope* of power, and the *amount* of power. The base of power refers to the resources available to *A* that enable him to get *B* to do what he wants him to. Some examples include sanctions and rewards. Means are instruments used to exert power (e.g., the use, or threats or promises of use, of sanctions or rewards). The scope is the range of power *A* has over *B* and consists of *B*'s possible responses. Dahl represented the amount of power as the probability of *B* doing what *A* wants. Teachers may offer better grades in an attempt to secure better study habits. The grades are the

base of power, the offer of better grades the means, and the range includes all possible responses to the offer of good grades to include better study habits. The amount of power is the probability that the offer of good grades will induce students to adopt better study habits.

In his discussion of power relations, Dahl (1957) included three necessary conditions for the power relation. The first is that there is time, however short, between *A*'s actions and *B*'s responses. Dahl asserted this time lag is very important to the study of power relations as investigation may discover additional steps in the decision-making process and reveal previously unknown relationships. The second necessary condition is that there is no interaction without proximity. Dahl posited that without some kind of connection between *A* and *B* there can be no power relation. The final necessary condition goes back to Dahl's definition of power: to the extent that he can get *B* to do something that *B* would not otherwise do. Regardless of the base, the means, or the amount of power, if *A* cannot get *B* to do what he wants him to do or if *B* would have done it even without *A*'s influence, *A* has no power over *B*. Dahl discussed this condition in terms of probabilities. If the probability that *B* will do something when *A* exerts power is greater than the probability that *B* will do it without *A* exerting power, then *A* has power over *B*. If not, *A* has no power over *B*. In fact, Dahl even included the concept of *negative power* wherein the probability of *B* doing something is lower if *A* exerts power. The situation in which the teenager was on his way to empty the trash, but refused to do so after his father told him to serves as a clear example; nearly every parent has experienced negative power. Dahl's concept of power is that of a characteristic of a person or group. However, Emerson (1962) had a different concept.

## **Power of Mutual Dependence**

Fifteen years after Weber proposed a definition of power, the collective body of knowledge regarding power had not been advanced significantly (Emerson, 1962). That was because, according to Emerson (1962), of the flaw of thinking of power as a characteristic of a person or group. Instead, Emerson said, power is an attribute of a social relation. It is pointless to consider *A*'s power unless the question over whom is also examined. The heart of Emerson's theory of power lies in this relationship. It is a relationship of mutual dependence. Each actor depends on the other for something and the power is in this dependency (Emerson, 1962).

Emerson (1962) defined power in terms of overcoming resistance. "The power of actor *A* over actor *B* is the amount of resistance on the part of *B* which can be potentially overcome by *A*" (p. 32). Also key to Emerson's theory of power is his concept of dependence which hinges on two variables. First, the dependence of actor *B* upon actor *A* is directly related to how invested *B* is in the goals *A* can facilitate. Power then comes from the ability of *A* to control things *B* values. Secondly, the dependence of *B* upon *A* is inversely related to the extent to which *B*'s goals can be met outside the *A-B* relationship. *A*'s power comes from being the only, or at least the most readily available, means of *B*'s attaining his goals. In the teacher/student relationship, the student is dependent on the teacher for learning a particular subject. According to Emerson, the strength of this dependence, and hence the power, depends on how much students value the learning (for whatever reason) and whether students are able to learn the subject from someone else or in some other way.

Emerson (1962) further emphasized two points regarding his definition of power. Although there may be a power relationship on some level between *A* and *B*, it will not be readily evident at all times. Only when *A* places some demands on *B*, and then only if those demands are counter to *B*'s wishes will the power relationship be evident. A change in *B*'s behavior in response to *A*'s demands must be part of any definition of power. Additionally, Emerson did not restrict the power-dependence relationship to positive aspects. *B* may be dependent upon *A* for self-esteem. *B* could be drawn into any number of nefarious acts by *A* in order to meet his goal of gaining/maintaining self-esteem.

In situations where power and dependence of both actors is equal (balanced relation), power still exists, but there is no dominance of one actor over another. Unbalanced relations occur when power and/or dependence are not equal. As long as either actor is dependent on the other's achieving some goal, there will be a power relationship.

This brings the discussion to three features of the power relations. First is power advantage (Emerson, 1962). As the name suggests, this occurs when the power relation is unbalanced with one actor having greater power than the other (of course the corollary is that one actor [the one with less power] is more dependent on the other). This can also be thought of from the other perspective as a power disadvantage (Emerson, 1962). The second feature is cohesion and can be thought of as the average of the dependencies of both actors in the power relation. Finally, balancing operations are those changes in the relationship that reduce the power advantage.

Emerson (1962) pointed out two ways in which actors will attempt to balance an unbalanced power relation. One way to do so is through cost reduction. Cost in power relations is equivalent to the resistance that must be overcome. It is the cost to meet the demands of the party with power. Cost reduction then is changing of values to reduce the pain of meeting the demands. *B* may come to accept some act he previously abhorred in order to lessen his resistance and therefore reduce the cost of complying with *A*'s demands. Emerson posited because these changes in values occur to preserve the relationship, cost reduction often serves to deepen and stabilize the relationship. As discussed above, balancing operations can be used to change features of the power relation.

There are four balancing operations. To simplify my illustrations of these balancing operations, actor *A* will be the more powerful and actor *B* the more dependent. The first operation is withdrawal. This involves motivational withdrawal on the part of *B*. If *B* loses some interest in the goal of the relationship, he will lessen his dependence upon *A* and, consequently, lessen the power of *A* over him (Emerson, 1962). The second balancing operation is extension of the power network. In this instance *B* will attempt to find alternative sources for meeting his goals. Again he lessens his dependence on *A*, thereby rendering actor *A* less powerful (Emerson, 1962). The third balancing operation is the emergence of status. *B* can increase *A*'s motivational investment in the relation by giving *A* status recognition. *A* becomes more dependent on *B* (for the status recognition) thereby increasing *B*'s power (Emerson, 1962). The final balancing operation is coalition formation. Here *B* increases power by joining with a third actor (ostensibly the one sought out as an alternative source of goal-achievement in balancing operation number

two) to become a “collective actor” (Emerson, 1962, p. 37). When *B* and *C* (the third member) act as one, *A* has no alternative means to meet goals and becomes more dependent on the *BC* collective, thereby rendering both *B* and *C* more powerful (Emerson, 1962).

### **Bases of Power**

In what is perhaps the most widely cited (Raven, 2008) and most useful (Wheless, Barraclough, & Stewart, 1983) analysis of social power, French and Raven (1959) set out to identify the types of power and provide systematic definitions to facilitate research into social power. They defined social power in terms of social influence and psychological change. Psychological change is defined as “any alteration of the state of some [psychological] system *a* over time” (p. 151). French and Raven used the designator *P* to denote the person being influenced and *O* the social agent. They defined social influence as the “force [occurring in the] life space of *P* . . . on a system, *a*, which has its source in an act of *O*” (p. 151). They asserted this influence has directional components: the intended force of influence: positive influence, and the opposite, unintended resistance force: negative influence. Consequently, French and Raven (1959) defined the power of *O* over *P* in some system *a* as “the potential ability of *O* to influence *P* in *a*” (p. 152).

French and Raven (1959) emphasized the potentiality of this power, stating that the strength of *O*’s power is measured by the maximum possible influence, though *O* may, depending on the circumstances, exert less than full power. They further emphasized that power must be defined with regard to a system as *O*’s power over *P* may vary greatly in differing systems. As an example, they posited *O* may be able to

influence  $P$ 's behavior, but not his opinions. French and Raven discussed degree of dependence of the changed state of  $a$  on  $O$ . This dependence amounts to whether the change in  $a$  persists after  $O$  is removed. For example, if workers continue high production rates at the behest of  $O$  only if  $O$  is watching, the new system is said to be dependent on  $O$ . If the high production continues when  $O$  is no longer watching, the new system is independent of  $O$ .

French and Raven's (1959) in-depth analysis proposed five bases of power: reward power, coercive power, legitimate power, referent power, and expert power. Raven (2008) later added a sixth base of power, informational power. Reward power is based on the ability to reward (French & Raven, 1959). It depends on  $O$ 's ability to deliver positive experiences and to remove negative ones. Its strength depends on  $P$ 's perception about  $O$ 's ability to actually deliver or remove these experiences. As such, the new system brought about by the promise of rewards by  $O$  is highly dependent on  $O$  (French & Raven, 1959). From the mere acknowledgement of a correct answer to the awarding of higher grades for higher achievement, reward power is prevalent in nearly every teacher/student relationship.

Coercive power of  $O$  over  $P$  comes from  $P$ 's expectation that  $O$  will mete out some punishment if  $P$  does not conform to  $O$ 's attempt at influence. The strength of coercive power depends on the strength of punishments threatened by  $O$ , as well as the probability that  $P$  can avoid the punishments if he complies with the influence attempt. Again, the new system brought about by coercive power will be highly dependent on  $O$  (French & Raven, 1959). Just like rewards, teachers often rely heavily on coercive power to secure needed compliance in the classroom.

Raven (2008) further differentiated reward and coercive power into personal and impersonal forms. The forms of reward and coercion I have previously discussed, the threat of tangible rewards or punishments, are labeled impersonal. Raven added personal reward and coercion to include intangibles such as approval or rejection.

The third basis of power proposed by French and Raven (1959), legitimate power, is “that power which stems from internalized values in *P* which dictate that *O* has a legitimate right to influence *P* and that *P* has an obligation to accept this influence” (p. 159). They proposed three bases for legitimate power: cultural values, acceptance of the social structure, and designation by a legitimizing agent. Characteristics of *O* such as age or intelligence may be specified by *P*’s culture as giving *O* the right to determine *P*’s behaviors (e.g., cultural values in the U.S tell us teachers, who are educated and older, have a right to dictate behaviors in the classroom). Likewise, as *P* comes to accept the social structure of his group, he will begin to accept the legitimacy of *O* who occupies a superior office in the hierarchy of the group structure (e.g., in the social structure of the school, teachers are placed higher in the structure and therefore have a right to dictate behavior). Finally, if *O* has been granted power by a higher, legitimizing authority (e.g., a principal introduces a new teacher), *P* is likely to see *O* as having legitimate power. Because it is based on *P*’s values, the new state of a system resulting from the use of legitimate power usually starts out as highly dependent on *O*. However, because *P*’s values have been activated, the state of the system often becomes less dependent on *O* and more dependent on *P*’s values. This leads to a relatively stable system (French & Raven, 1959).

According to Raven (2008) legitimate power can also be differentiated into four different forms. Legitimate position power “stems from a social norm that requires that we obey people who are in a superior position . . .” (p. 4). Parents influencing children, police officers influencing citizens, and teachers influencing students are examples of legitimate position power. Legitimate power of reciprocity comes from the obligation to reciprocate when someone does something for us. (I scratched your back, now you should be obliged to scratch mine.) Legitimate power of equity “can be thought of as righting a wrong” (p. 4). I have a right to ask someone who has harmed me to do something to make up for it. Finally, the power of legitimate responsibility stems from social responsibility. “We have some obligation to help others who cannot help themselves, or are dependent upon us” (p. 4).

The referent power of *O* over *P* is based in *P*’s identification, or desire for identification with, *O*. (French & Raven, 1959). *O* has the ability to influence *P* because *P* wants to establish or maintain his relationship with *O*. The strength of *O*’s power over *P* is proportional to the strength of *P*’s identification with *O*. The initial dependent changes in the state of the system resulting from the use of referent power likely become independent quickly (French & Raven, 1959). Teachers often try to tap into referent power when they attempt to establish connections with students. Friendly smiles, kind words, and convivial interactions are attempts to leverage referent power.

The final basis of power proposed by French and Raven (1959), expert power, is attributed to “the extent of the knowledge or perception which *P* attributes to *O* within a given area” (p. 163). *P* likely evaluates *O*’s expertise against some standard or against *P*’s own knowledge. *P* must believe *O* knows something and trust that *O* is not deceiving

him. Expert power is thought to produce a new cognitive structure in *P* and that structure is initially highly dependent on *O*. This dependence wanes over time. As teachers are highly educated in their subject matter, they are able to leverage expert power nearly all the time. Teachers must, however, continue to exhibit this expertise. If students come to believe the teacher is not an expert, this base of power will erode.

Although discussed as a type of expert power (it was called informational influence in French and Raven's [1959] initial work), informational power was not introduced as such until Raven began publishing on his own (Raven, 2008). According to Raven (2008), informational power is utilized when "the supervisor carefully explains to the subordinate how the job should be done differently, with persuasive reasons why that would be a better and more effective procedure. The subordinate understands the reasons and changes behavior" (p. 2). Informational power produces a change in the state of a system that is not dependent on *O*.

### **Comprehensive Classes of Power 2**

There are nearly as many theories and classifications of power as there are researchers into the same subject (see Etzioni, 1975; Kelman, 1961; Mintzberg, 1983; Parsons, 1963; and Zaleznik & Kets de Vries, 1975 as examples). Wheelless et al. (1983) defined power as "the perceived bases of control that a person has over another person's behavior that would not have otherwise occurred" (p. 128). In their analysis of compliance-gaining and power, they sought to identify a higher-order system that would incorporate the majority of them. They subsequently identified three broad classes of power.

The first class is based on expectancies or consequences. Under this class, power has been applied when people have been made aware of the consequences of their actions and they make choices in regard to those consequences (Wheless et al., 1983). If an influencing agent (*O* from French and Raven, 1959) offers a reward or threatens punishment, the target (*P* from French and Raven, 1959) then has a preview of positive or negative consequences that result from compliance. The target then must decide if receiving the reward or escaping the punishment will compel him to comply. This class of power, called expectancies/consequences, encompasses French and Raven's reward and coercive powers as well as other power concepts of deterrence, inducement, remuneration, compliance, etc. (Wheless et al., 1983).

The second class of power noted by Wheless et al. (1983) stems from relationships between the agent and the target or identification of the target with the agent. If one person wants to be like another to the extent that he follows the other's examples, the second person has power over the first. If one person has a strong desire to be in a particular group, the members of that group hold power. When one person in a relationship is especially qualified or has particular knowledge over and above the other person (or people) in the relationship, the person with the skill or knowledge has power, particularly in the area of skill or knowledge. The relationships/identification class of power includes French and Raven's (1959) referent, informational, and expert powers as well as other theories of social power, identification, rapport, etc.

If an agent can get a target to comply by drawing on the target's sense of duty or obligation, the agent's power is derived from the target's values (Wheless et al., 1983). Individuals' value systems that tell them it is right and just that certain other people (e.g.,

clergy, parents, teachers) can direct their behavior grant power to those “others” under this values/obligation class. Likewise if an agent can persuade a target by focusing on the moral nature of a behavior and that target’s values are such that the target changes, the agent’s power falls into this same class. The values/obligations class of power also includes French and Raven’s legitimate power as well as other power concepts such as normative power, internalization, persuasion, commitments, etc. (Wheless et al., 1983).

### **Summary**

Some common threads run through these theories of power. First, it is clear that there are many types of power. All involve the influence *A* has with *B*. All involve the movement of *A* and *B* (and any others influenced) toward some end. Second, power is more than the layman’s definition of power, a definition shored up by tyrannical leaders from the past and media depictions of similar fictional tyrants. Although, French and Raven’s (1959) coercive power brings to mind these exact examples, it is, as noted, only one of many types of power. Others, such as referent and expert power, bring to mind a different kind of relationship. One in which the subordinate depends, a la Emerson (1962), on the superordinate for guidance and direction toward a common goal. Third, it should be strongly noted that each of these definitions and concepts contains an interpersonal aspect. Power does not exist without some relationship between actors. We cannot discuss an actor’s power without also discussing over whom the power is being exerted (Wheless et al., 1983). *A* has no power unless *B* is present. *O* cannot influence no one. He must have a *P* towards which his influence is aimed. Fourth, the power relationship is a function of the attributes of both *A* and *B*. *A* has power over *B* only to the extent that *B* values what *A* has to offer (or take away; Dornbusch & Scott,

1975) or to the extent that *B* perceives *A* is capable of delivery (Wheless et al., 1983).

No amount of money in the world would allow *A* power over *B* if *B* does not value money; the threat of death yields no leverage for *A* if *B* does not value life. Likewise, if the target does not think the agent can produce the promised reward, the agent has no power. If the target does not think the agent can enforce the threatened punishments, the agent has no power. Finally, the values of the group in a given situation will determine what leads to a power relationship (Dornbusch & Scott, 1975). Naturally, these values will change with different groups or even with the same group in different situations. Thus, the bases of power vary. If a group is asked to provide a technical solution to a computer programming problem, it is likely that those individuals within the group with programming skills will wield some power as they are the group members on whom the remainder of the group will become dependent for goal achievement. If, however, that same group is asked to scale a wall (or any other different task) the bases of power have changed because the values of the group have changed. The group no longer needs computer programming skills, but now needs the skills involved in climbing. Different individuals will be granted power if they possess the newly required set of skills.

### **Power by a Different Name— Social Control**

Some social scientists eschew the use of the “P” word. Some argue power is too broadly defined and should not be used when authority, persuasion, or exchange are implied (Mitchell & Spady, 1983; Spady & Mitchell, 1979). Perhaps they are concerned the negative connotations will turn the power-squeamish away in social situations where the use of the “P” word is distasteful (e.g., the education setting). Words do mean things, after all. Whatever the reasons, some social scientists prefer the term social control and

speak in terms of cooperation and rule-following. I discuss some of their theories of compliance-gaining below.

### **Rational and Internal Motives**

Tyler (2002) discussed both rational and internal motivations for cooperative behavior. Using rational motivations, there are two ways leaders shape people's outcomes. First is the provision of incentives and rewards. Leaders can reward desirable behavior through monetary incentives such as bonuses and stock options as well as non-monetary incentives such as time off and public recognition. Tyler (2002) pointed out that this system of incentives encourages good feelings towards the leader and the organization as workers come to associate each with the distribution of rewards. He also pointed out that this system of rewards may actually undermine intrinsic motivation as people will tend to focus on those behaviors that garner rewards and not perform other tasks that may benefit the company if those tasks are not normally rewarded.

Another way to gain compliance using rational motivations is through the use of a deterrence model (Tyler, 2002). The use or the threat of the use of force is the primary method of employment in a deterrence model. The difficulty in using the deterrence model is surveillance. Leaders who wish to punish followers for inappropriate behavior must catch them in the act. Surveillance tends to be less than perfect, can involve the expenditure of large amounts of resources, and leads to a sort of *selective enforcement* in that only those who get caught are punished.

These external methods of gaining compliance, as Tyler (2002) pointed out, can be effective in the short term, but teachers should likely not rely on them for long-term

behavior change. Rather, teachers should cultivate their abilities to leverage internal motivations in order to gain compliance and cooperation from their students.

In his discussion of internal motivations, Tyler (2002) began by examining two types of attitudes that drive cooperation. The first is intrinsic motivation. He suggested that based on intrinsic motivation people may cooperate of their own volition because cooperation is its own reward and does not require rewards or incentives. Tyler cited social identity theory when discussing the second attitude: commitment to the group. He stated people come to identify with the group in which they are members and having done so, they put the needs of the group above their own. As such, benefiting the group becomes its own motivation and no external reward is needed.

Along with attitudes, Tyler (2002) posited a second type of internal motivation that may be accessed to secure cooperation is the influence of people's values. He contrasted attitudes and values by pointing out attitudes motivate people to engage in desirable behaviors while values, because they are feelings about what is right and proper, motivate people to refrain from undesirable behaviors.

There are two types of values relevant to gaining cooperation. The first is morality. Leaders gain from creating an atmosphere in which it is morally wrong to break rules, because people are less likely to break rules if they think doing so is morally wrong. Conversely, if the morality of group members is not aligned with the goals of authorities, it may be extremely difficult for leaders to obtain cooperation from the group (Tyler, 2002).

The second type of value that aids authorities in securing cooperation from group members is legitimacy. Tyler (2002) defined legitimacy as "the feeling of obligation to

obey the rules, authorities, and institutions of a group” (p. 776). People in groups feel that a legitimate leader is entitled to be obeyed. The key is that legitimacy is a value. As such, people believe it is their responsibility to follow the directives of the legitimated leader. Organizations that rely on legitimated leaders do not need to use incentives or sanctions, which as noted above can be extremely costly as well as ineffective, to gain compliance from subordinates (Tyler, 2002).

Legitimacy has its drawbacks as well. People have a tendency to hand over decision-making about appropriate behavior to legitimate authorities. This can be positive, but when decisions made by these legitimate authorities are inappropriate, or worse, immoral, this can lead people to take part in these inappropriate or immoral activities (Tyler, 2002). Tyler’s motivations for behavior are similar to Hurd’s (1999) currencies of power.

### **Currencies of Power**

Hurd (1999) suggested three reasons why someone might obey a rule: (a) fear of punishment, which Hurd called coercion; (b) self-interest; and (c) because the rule is seen as legitimate and, therefore, ought to be obeyed. The relationships between leaders and followers are different in every situation and the mechanism for securing rule-following behavior, the *currencies of power*, will reflect those differences. Often there is a blending of the three.

Hurd (1999) described coercion as “a relation of asymmetrical physical power among agents, where the asymmetry is applied to changing the behavior of the weaker agent” (p. 368). Hurd’s coercion is similar to Tyler’s (2002) deterrence as described above. It is the fear of punishment that motivates a subordinate to obey the rules in a

coercive relationship. Although they produce compliance, coercive systems will necessarily require the extensive use of resources to detect undesirable behaviors and levy punishments. Organizations that rely on coercion may experience lower levels of rule-following when surveillance is lacking as well as bitterness and defiance from the masses (Hurd, 1999).

Those who follow rules out of self-interest, do so after a calculation of the benefits of their behaviors (Hurd, 1999). Authorities who wish to capitalize on this self-interest should ensure the benefits to subordinates for rule following are high. Hurd's self-interest is similar to Tyler's (2002) rewards explained above. As with coercion, self-interest produces compliance, but it is not without its own problems. Organizations that rely on self-interest may have trouble maintaining the loyalty of its workers. The minute a better benefit comes along, those motivated by self-interest will likely "jump ship." This means the self-interest-reliant organization has to keep the benefits coming (Hurd, 1999). This can quickly become resource-intensive. It also leads to tenuous long-term relationships. It is difficult to maintain these types of relationships over time if the benefits do not remain positive (Hurd, 1999).

Finally, people may follow rules because they believe they are morally obligated to follow them. They believed the rule, or the system that created it, was legitimate and, therefore, was right and ought to be followed. This parallels Tyler's (2002) legitimacy as discussed above. Hurd (1999) used Suchman's (1995) definition of legitimacy: "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (p. 574) and emphasized the internalization aspect of legitimacy. People

internalize the rules and norms of a legitimate system and compliance becomes routine. In fact, due to the internalization, it is non-compliance that becomes inconsistent with people's new way of thinking (Hurd, 1999). Tyler and Blader (2005) encapsulated Hurd's (1999) three reasons for obeying rules into two approaches to gaining compliance.

### **Command-and-Control Versus Self-regulation**

Tyler and Blader (2005) referred to two approaches to gaining compliance with rules and policies: the command-and-control approach and the self-regulatory approach. The command-and-control approach used by Tyler and Blader encompasses Tyler's rewards and deterrence and Hurd's coercion and self-interest as discussed above. People calculate the costs and benefits of rule following and base their compliance on those calculations (Tyler & Blader, 2005). Tyler and Blader echoed the position that the "carrot and stick" approach can prove costly as organizations must expend considerable resources on surveillance to detect rule breaking as well as maintaining effective incentives.

Much like Tyler's attitudes and values and Hurd's legitimacy, the self-regulatory approach (Tyler & Blader, 2005) relies on intrinsic motivations to gain cooperative behavior. People comply with policies and follow rules based on internal desire and self-regulation. Tyler and Blader (2005) posited two judgments made by employees about their employers. The first is the legitimacy of the rules and authorities in the organization. Employees who perceive their bosses and the organization in which they work as legitimate are more likely to comply with rules and policies. The second judgment is whether the rules and policies of the organization are congruent with the

employee's own moral values. This congruence can lead employees to have an intrinsic desire to follow rules (Tyler & Blader, 2005).

### **Summary**

Essentially two methods of gaining cooperation, compliance, and rule-following behaviors emerge: external methods, such as coercion and incentives, which parallel French and Raven's (1959) reward and coercive power, and internal methods such as legitimacy, which parallel French and Raven's referent, expert, and legitimate power. Although external methods produce immediate compliance, they are also costly in terms of resources and may lead to group members resenting the authority figures who use them. The internal methods of gaining compliance also produce results, and although they have their own drawbacks, develop in employees an intrinsic desire to comply with policies and cooperate. This self-regulating behavior is desirable for many reasons, not the least of which is that organizations do not have to rely on a continuous stream of incentives or resort to extensive surveillance to gain compliance from their subordinates.

### **The Power in the Classroom Study Series**

Although some may disdain the use of power or compliance-gaining techniques in the classroom, its use, especially its appropriate use, is necessary to the attainment of classroom objectives (McCroskey & Richmond, 1983). A teacher's principal job is to influence students (Richmond & Roach, 1992). Without power there is no influence; without influence there is no learning. Power is necessary, even in the classroom.

### **Power I**

From 1983 to 1990, a group of communications researchers conducted a series of studies examining the relationship between students' perceptions of teachers' power

usage in the classroom and a number of student outcomes to include cognitive learning, affective learning, and motivation. The first of these studies was conducted by McCroskey and Richmond (1983) and laid the foundation for the remaining studies by examining how well teachers' and students' perceptions agreed regarding the use of power in the classroom. McCroskey and Richmond used French and Raven's (1959) original five bases of power (coercive, referent, legitimate, reward, and expert) as the definitions of power for their study and asked teachers and students how frequently they (or their teachers) used each power base. Results indicated teachers and students held shared perceptions about uses of power and that referent, reward, and expert power were used more frequently than coercive and legitimate power (McCroskey & Richmond, 1983). Not surprisingly, results also indicated teachers believed they used expert power more often than their students believed teachers used expert power.

## **Power II**

The second study of the series examined the relationship between teacher and student perceptions of power used and cognitive and affective learning (Richmond & McCroskey, 1984). Results showed significant associations between four of the five bases of power and the learning outcomes studied. Coercive and legitimate types of power were negatively associated with learning. Referent and expert power were positively associated with learning. Interestingly, reward power was not significantly associated with cognitive or affective learning (Richmond & McCroskey, 1984). These first two studies, with their indications of perceptual congruity between teachers and students and strong associations between power bases and learning outcomes, justified further study into power into the classroom

### **Power III**

Having established that the use of power is indeed important to learning outcomes, the third study in the series sought to examine the *how* of power in the classroom. Kearney, Plax, Richmond, and McCroskey (1985) looked at the methods teachers used to communicate their power by asking 177 college students what techniques and behaviors their teachers used or exhibited to communicate power. This resulted in the generation of 18 Behavior-Alteration Techniques (BATs; Kearney et al., 1985). Kearney et al. (1985) subsequently provided this list of BATs to elementary and secondary teachers and asked them to indicate the frequency with which they used these BATs. Results showed that teachers perceived they use primarily what Kearney et al. (1985) termed prosocial BATs (e.g., rewards, expertise, and responsibility).

### **Power IV**

With the BAT foundation clearly laid, the fourth study in the series sought to revise and validate the original 18 BATs. Kearney, Plax, Richmond, and McCroskey (1984) asked teachers for their list of techniques and behaviors used to manage students. The teachers' list of behaviors and messages resulted in a revised list of 22 BATs. Again Kearney et al. (1985) presented their list of BATs to elementary and secondary teachers. Teachers again reported perceptions of using mostly prosocial BATs.

### **Power V**

With a list of techniques for using power in hand, the group of researchers proceeded to the fifth study of the series. In study five, McCroskey, Richmond, Plax, and Kearney (1985) examined the relationship between teachers' use of the BATs and affective learning as well as the effect of communication training on teachers' use of

BATs. Results of the fifth study indicated a substantial relationship between students' perception of teachers' use of BATs and affective learning. Specifically, prosocial BATs (referent and expert power) were positively related to learning, but antisocial (coercive and legitimate power) BATs were negatively associated. Additionally, the study showed teachers' use of BATs differed with their training in communication. Both trained and untrained teachers used prosocial BATs, but those untrained tended to use antisocial BATs significantly more often.

### **Power VI**

The sixth study in the Power in the Classroom series expanded the paradigm to include teacher immediacy. Immediacy refers to "particular communications behaviors that enhance physical or psychological closeness" (Plax, Kearney, McCroskey, & Richmond, 1986, p. 45). Physical closeness, eye contact, and smiling are just a few examples of immediacy behaviors (Plax et al., 1986). Plax et al. (1986) used a sample of junior and senior high students and a sample of college students to examine the relationships among selective BAT use, teacher immediacy, and students' affective learning (Plax & Kearney, 1992). Results of this sixth study indicated selective BAT use was related to students' affective learning and that this relationship was mediated by nonverbal teacher immediacy (Plax et al., 1986).

### **Power VII**

Since the primary goal of the use of BATs is to influence students' behavior to maximize cognitive learning, it was the objective of the seventh and final numbered study to examine the relationship between differential BAT use and students' cognitive learning (Plax & Kearney, 1992). Richmond et al. (1987) used students' perceptions of

their own learning as their measure of cognitive learning to discover prosocial BATs were positively associated and antisocial BATs were negatively associated with cognitive learning.

### **Power and Motivation**

While teachers are certainly interested in using their bases of power to gain short-term compliance, they are also concerned that their use of power does not have negative effects on attainment of other educational goals (Richmond, 1990). In short, “the real focus of education must be on shaping the motivation of students for the rest of their lives, not gaining students’ compliance for a few minutes, hours, or days” (Richmond, 1990, p. 182). Richmond (1990) conducted an additional study to investigate the effects of the use of power on students’ motivation. She surveyed undergraduates to gather data on motivation, BAT use, use of the different bases of power, teacher immediacy, affinity-seeking techniques, cognitive learning, and affective learning. Affinity seeking techniques are attempts by teachers to get students to like them (Richmond, 1990). With the results of the previous seven studies in mind, it is not surprising that results of Richmond’s study indicate bases of power, teacher immediacy, and teacher affinity-seeking were related to student motivation. As seen previously, coercive power had a negative relationship while referent power was positively associated. Interestingly, in this study, use of BATs was not related to student motivation.

### **Summary**

One central conclusion can be drawn from the *Power in the Classroom* series and Richmond’s (1990) continuation. There is a definite relationship between power use and student outcomes such as cognitive and affective learning and motivation. Use of

prosocial techniques that draw upon referent and expert power is positively associated with these outcomes, while use of antisocial techniques drawn from coercive and legitimate power is negatively associated. Succinctly, the appropriate use of power in the classroom is important. Power that is seen as appropriate by those upon whom it is wielded is thought by some to be the definition of authority. I discuss theories of authority next.

### **Authority**

When discussing whether commands would be obeyed by a given group of people, Weber (1947/1964) used the term *herrschaft*. As previously discussed, this term is loosely translated as imperative control, although a footnote in the translation used here indicates there is no sufficient English translation for the German word *herrschaft*. Weber's primary concern was *legitimate herrschaft*. Students of Weber believe what he was referring to by using this term was the concept of authority (Weber, 1947/1964). Wilson (1992) would have us believe "the concept of authority is primary . . . no human interaction is possible without authority" (Abstract, para. 1).

### **Classic Authority Theory**

Weber (1947/1964) recognized that in every authority relationship there was an element of "voluntary submission" and an "interest in obedience" (p. 324) and saw an inextricable link between the authority system and the belief in its legitimacy. Weber believed all systems of authority attempt to "establish and to cultivate the belief in [their] 'legitimacy.'" But according to the kind of legitimacy which is claimed, the type of obedience . . . , and the mode of exercising authority, will . . . differ fundamentally" (p.

325). He, therefore, classified the types of authority according to the type of legitimacy claimed. A brief description of Weber's types of authority follows.

Weber (1947/1964) defined legal authority as "resting on the belief in the 'legality' of patterns or normative rules and the right of those elevated to authority under such rules to issue commands" (p. 328). This is obedience to the established order. Managers have authority over workers according to their positions on the organization chart. Teachers have authority over students because they have been appointed to stand in front of the classroom.

Traditional authority is defined as "resting on established belief in the sanctity of immemorial traditions and the legitimacy of the status of those exercising authority under them" (Weber, 1947/1964, p. 328). This is differentiated from legal authority by the fact that obedience is to the person occupying the position, not to the position itself. Ms. Smith is a manager and the workers are obedient to Ms. Smith. Mr. Jones is the teacher and students are supposed to listen to Mr. Jones.

Charismatic authority is defined as "resting on devotion to the specific and exceptional sanctity, heroism or (sic) exemplary character of an individual person, and of the normative patterns or order revealed or ordained by him" (Weber, 1947/1964, p. 328). This is obedience to the person because of certain characteristics or qualities. Ms. Smith is a manager who knows all the processes required to get the job done and her workers are compliant because they recognize her expertise. Mr. Jones shows a great deal of knowledge about chemistry and students are compliant because they see that knowledge. While Weber's is recognized as the classic theory of authority, Metz (1978) has

expounded on his theory and emphasizes the moral order which the authority relationship serves.

### **A Duty to the Moral Order**

Metz (1978) defined authority as:

The right of a person in a specified role to give commands to which a person in another specified role has a duty to render obedience. This right and duty rest upon the superordinate's recognized status as the legitimate representative of a moral order to which both superordinate and subordinate owe allegiance. (p. 27)

She distinguished authority from other supervisor/subordinate relationships in that in an authority relationship, the superordinate has a right to command and the subordinate has a duty to obey. This is because the two are in a relationship that “exists for the service of a *moral order to which both owe allegiance*” (p. 27, emphasis in original).

Metz (1978) went on to emphasize that the furtherance of this moral order is the reason authority exists. One person in the relationship has a greater ability to see the needs of the moral order and translate them into action. That person therefore, has the right to issue commands while the other has the duty to obey, all in the name of the moral order. The ability to implement specific activities that will benefit the moral order can come from a number of sources. As Metz put it, this ranges “from the mystic endowments which let the pope speak infallibly *ex cathedra* to the pragmatic knowledge of an executive who receives reports from several divisions of a company” (p. 27).

Because the superordinate is acting on behalf of the moral order, obedience to the superordinate is obedience to the moral order. In using the term moral order, Metz was referring to the system in which the actors find themselves and the overall direction or goal of that system. In the classroom, the moral order refers to learning. The teacher has the skills and knowledge to facilitate learning and is therefore granted the authority to

issue commands and implement activities in furtherance of that learning. Benne (1970) differed from Weber and Metz in his theory of authority by emphasizing the rationality of the authority relationship.

### **Rationality**

Benne (1970) offered this regarding the definition of authority relations:

The bearer of authority receives willing obedience from the subjects of his (or its) authority as the bearer exercises his (or its) claim to help mediate the field of conduct or belief in which the subjects are in need of advice, leadership, guidance, or direction. (p. 393)

Benne emphasized the three parts of the social relationship: the subject, the bearer, and the field in all further discussion of authority. Rationality is key to his definition. The authority figure can rationally explain his competence and the subjects of authority are rationally able to decide whether the authority figure is actually meeting their needs.

Benne (1970) offered three types of authority. The first type, authority of expertise, depends upon “the extent that . . . men and women depend upon others with claims to expertise in specialized process integral to their ways of living” (p. 394).

Benne used the relationship between a doctor and patient as an example of this type of authority. The relationship between teachers and students in most classes through high school as well as general education classes (e.g., Introduction to Psychology) in college is as an example more pertinent to the current study. (I discuss more advanced teacher-student relationships presently.)

The second type of authority offered by Benne (1970) is authority of rules. In essence he referred to the fact that people place themselves under authority and willing defer to the authority figure in order to realize the benefits of participating in the relationship. He went on to say rules exist to facilitate orderly interactions among those

in the system and that in this system the rules authority has ultimate decision-making power. Important in understanding Benne's concept of rule authority is his emphasis that authority of rules does not come from the original purveyor of the rules, but from the willingness of those who have accepted the rules and the constant change and renegotiation of these rules as they continued to be accepted and followed by further generations.

Benne's (1970) final type of authority is *anthropogological* authority. Benne coined this term to denote the authority relationship that "is marked by a growing coincidence between the [bearer's] status and the competence of the [subject's] need. The fundamental anthropogological task is induction of the [subject] into viable membership in a community of [field-related] persons" (p. 400). The anthropogological authority figure does more than offer advice or expertise; the anthropogological authority figure brings the subject into the fold of the field. The subject is not merely learning about the field or about the rules of the field, the subject is becoming a member of the field (as, ostensibly, the bearer already is). This is the relationship between teachers in more advanced courses in college, particularly graduate school courses. These advanced courses do more than just survey general topics in a subject area; they begin to delve deeply into subject matter comprising the knowledge of the community to which they belong. Students in these classes are likely seeking to become members of their respective communities and it is the teacher's duty to make them so. While Benne offered rationality as a key piece of the authority relationship, Dornbusch and Scott (1975) emphasized the perceptions of the subordinate as defining the relationship.

### **Subordinates' Perception of the Authority Relationship**

Wilson (1992) suggested “authority . . . is the weight or status we give to the norms of interaction” (para. 19). The concept that it is those under authority, the subordinates, who give weight to these norms, thereby legitimating the actions of those in authority, the superordinates, is critical. Without these beliefs in norms those in power could not be granted authority. As such, it is the perceptions and thoughts of the subordinates regarding the use of power that determine the power relationship. There are four dimensions of authority relative to the way subordinates consider the authority of those under whom they serve: *validity*, *propriety*, *authorization*, and *endorsement*. Validity refers to an individual’s belief that he or she should obey rules set forth (Dornbusch & Scott, 1975). When subordinates acknowledge a rule exists and that it applies to them, it is said they believe the rule is valid. Whether they agree with the rule is not important, but only that they see it as binding upon them. Propriety refers to an individual’s willingness to accept and approve of a rule (Dornbusch & Scott, 1975). Propriety is the subordinates’ evaluation of the rule as appropriate and acceptable. Subordinates can see rules as valid, but not proper, or as proper, but not valid, or as both valid and proper. When subordinates see rules as neither valid nor proper, there is no authority (Dornbusch & Scott, 1975).

The two remaining dimensions also refer to views of others that may alter the power relationship. For these two dimensions, the issue of who the others are is the distinguishing factor. When “the others” are superordinate to the person in power (A) and those superordinates support, or legitimate, A’s power then A’s power is said to be authorized. When the others are those subordinate to A and those subordinates support

A's power then A's power is said to be endorsed (Dornbusch & Scott, 1975). Again, power can be endorsed, but not authorized, authorized, but not endorsed, or both authorized and endorsed. Without either, however, there can be no authority. These four dimensions interact to produce differing levels of legitimacy perceptions and therefore differing levels of compliance with rules. For example, rules that are endorsed and authorized are more likely to be seen as valid and therefore more likely to be followed. Students are no different from other subordinates in this regard and will constantly evaluate the validity, propriety, authorization, and endorsement of rules, policies, and procedures set forth by teachers.

### **Summary**

Researchers continue to rely on Weber's (1947/1964) classic theory of power and authority. His three types of authority: legal, traditional, and charismatic have stood the test of time and, more importantly, have given those researching authority a solid footing on which to begin. Expertise has become widely recognized as a fourth type of power, giving educational researchers an even more significant foundation for examining power and authority in the classroom. Researchers generally agree that the authority relationship is based on the superordinate having some right or legitimate claim to be in that role and the subordinate exhibiting some voluntary obedience because of that right. The relationship works because the right to command and the willing obedience exist within some set of norms or moral order. Finally, the perceptions of those under authority are critical. If they see the use of power as valid, proper, authorized, or endorsed they will be more likely to comply with the rules and requests made under it.

### **Authority in the Classroom**

A paradox exists in the classroom that makes the establishment and maintenance of authority relationships especially difficult. Teachers must encourage their students to engage in the class material, thereby facilitating learning. Simultaneously, teachers must implement measures of social control to maintain the level of order necessary for that student engagement (Pace & Hemmings, 2007). This paradox creates a pressure affecting the balance between legitimacy and consent requiring continued negotiations between teacher and student to sanction the authority relationship (Pace & Hemmings, 2007).

### **Swinging the Balance**

Teachers rely on several types of authority to swing the balance in favor of the learning environment. One type is practical authority (Steutel & Spiecker, 2000). Practical authority is authority over conduct. It is needed to maintain order and obedience in the classroom. It is necessary to enforce those rules which govern conduct in the classroom that is required for learning. This is the authority of someone *in* authority (Steutel & Spiecker, 2000). Another type of authority teachers rely on is theoretical authority. Theoretical authority is authority over beliefs (Steutel & Spiecker, 2000). It is necessary for teachers to fulfill their educator roles. It is the authority of “educators who present themselves as experts in the relevant disciplines or branches of enquiry” (Steutel & Spiecker, 2000, p. 325). This is the authority of someone who is *an* authority. Teachers need both practical and theoretical authority to enable them to strike the appropriate balance between social control and student engagement.

With both practical and theoretical authority, there is an implied right of recipience. Someone with practical authority has a right to rule, therefore a right to receive obedience. Someone with theoretical authority has a right to be believed, therefore a right to receive assent (an acceptance of ones beliefs, Steutel & Spiecker, 2000).

Two other descriptors of authority are useful when examining classroom authority. The first is *de jure* authority (Steutel & Spiecker, 2000). Someone who claims *de jure* authority is claiming the right to rule or to be believed. The claim to *de jure* authority is made by someone who claims the right of rule or belief and that person's claim is legitimate. The other descriptor is *de facto* authority (Steutel & Spiecker, 2000). The claim to *de facto* authority is made by someone who claims a right of rule or belief and that claim is accepted by subordinates. Spady and Mitchell (1979) took a slightly different approach to authority.

### **A Different Perspective**

Spady and Mitchell (1979) did not discuss authority as merely legitimated power. They separated authority from power all together. When they discussed power, they emphasized the resource manipulation/control and competition/conflict aspects of power. In essence they relied on Weber's coercive and reward power for their definition for power. When discussing authority, Spady and Mitchell emphasized the personal bases of legitimation. They asserted people do what they do because they believe there is intrinsic value, meaning, and significance in whatever it is they are thinking of doing. They further suggested authority is based on "intrinsically significant personal experiences that call forth voluntary and self-motivated activity" (p. 101). As such, they pointed to

authority, based on intrinsic legitimacy, distinct from social power, based on resource manipulation, as a mechanism of social control that is especially effective in achieving classroom goals.

In support of their assertions about authority, Spady and Mitchell (1979) talked about modes of authority as being a product of goals, roles, and systems affecting classrooms. They began by suggesting the role of the teacher is to facilitate and control classroom activities. By activities, Spady and Mitchell were speaking of the organized aspect of classroom behavior: the progression from one unit to the next, the themes of action that help students and teachers participate in the present and plan for the future, the regimented schedule of classes, etc. The role of the teacher is made more complex by the presence of societal, organizational, and personal sources of goals in the classroom.

Spady and Mitchell (1979) discussed two types of goals in classrooms. The first are achievement goals. These activities increase productivity of the classroom. These are the lessons, classrooms discussions, etc. that contribute to instructional goals. Spady and Mitchell referred to the school and classroom system that works toward these goals as the production system. The second type of goals Spady and Mitchell discussed is life goals. These activities create and maintain the social system where pursuit of goals takes place. Spady and Mitchell spoke of these activities as more than just classroom management. They emphasized the importance of activities designed to create support for schools based on a belief that classroom activities will lead to the realization of long-term personal and social goals. This system is called the maintenance system

Spady and Mitchell (1979) went on to discuss role themes in schools. They suggested there are two bases upon which roles are formed. The first is rules and routine.

Rules such as “raise your hand before you speak” and routines such as ordering of classes define formal roles. The second basis for role formation is the “spontaneous interpersonal relationships and affective bonds between individuals” (pp. 82-83). These relationships and bonds define informal roles.

Finally, Spady and Mitchell (1979) discussed four modes of authority for managing classroom activities. They based these modes on Weber’s (1947/1964) three types of authority, but separated expert authority and legal authority based on differences in bases of rationality. They asserted the rationale for legal authority is based on rules and principle, whereas the rationale for expert authority is based on theoretical knowledge. The first mode of authority Spady and Mitchell discussed is traditional authority. They suggested traditional authority has three basic characteristics.

It is supported by a strongly held and shared system of values and symbols that give significance and purpose to the social order. It embodies conceptions of ‘the good life’ in a set of customs and a system of ascribed identities and privileges granted to individuals who represent the conceptions. It draws upon historical precedents . . . for defining stable affective attachments among group members. (p. 104)

Tradition, they asserted is where collective goals and beliefs about what is important are stored. Traditional authority supports the maintenance system and the pursuit of life goals.

Spady and Mitchell (1979) thought differently about charisma than did Weber (1947/1964). Whereas Weber emphasized the scarcity of charisma, Spady and Mitchell suggested it is part of every human interaction and that the perception of the subordinate regarding the encounter is critical to charismatic authority. They further emphasized the “mutual empathetic bond” (p. 105) created by the charismatic relationship. “Charisma governs individual activities through the creation of informal and spontaneous role

relationships characterized by affective attachments and voluntary accommodation to another person's expectations" (p. 105). Charisma authority supports both maintenance and production systems and is seen as a more informal role.

Spady and Mitchell (1979) concurred with Weber's (1947/1964) concept of legal authority. They further suggested "legal authority operates through the specification of laws or rules that govern the behavior of all members of society" to develop "a system of circumscribed and secure roles for all members of the group" (p. 105). They emphasized that this legal authority holds only as long as the superordinate maintains the right to specify these rules. Legal authority also supports both maintenance and productions systems, but is seen as a more formal role.

The final mode of authority for managing classroom activities suggested by Spady and Mitchell (1979) is expertise authority. Those who possess expert authority help the system define and accomplish its goals through pertinent knowledge and skills. This authority sets up the relationships important for communicating knowledge, setting and enforcing standards, and developing new technologies. It also allows the subordinate to see an increase in his performance capabilities. Expert authority supports the production system and the pursuit of achievement goals.

### **Summary**

The classroom differs from other social organizations in that the superordinates, the teachers, are charged with encouraging student engagement; yet have to maintain order to the degree that students can engage. Often the techniques for attaining one goal run counter to attaining the other. Social scientists acknowledge this paradox and assert teachers must cultivate authority to be able to do both. Teachers must have practical and

theoretical authority, and their authority must be *de jure* and *de facto*. All the while, teachers' authority necessarily has to be some mixture of traditional, charisma, legal, and expert authority and come from student experiences teachers create that are supportive, collaborative, and "intrinsically significant" (Spady & Mitchell, 1979). In the next section I examine literature relevant to the intrinsic precursor of authority: legitimacy

### **Legitimacy**

Philosophers, social scientists, psychologists, and others have been studying legitimacy for over 2,000 years. From the time of Thucydides, Aristotle, and Plato great and lesser minds have been looking into the question, "What makes might right?" (Zelditch, 2001). A lengthy discussion of each of these philosophers' and authors' opinions is not within the scope of this paper, but it is generally accepted that pure power is not an effective leadership tool. What is needed is voluntary acceptance, voluntary deference, and voluntary loyalty to leadership and these depend on the legitimacy of the leaders (Zelditch, 2001).

Zelditch (2001) differentiated between theories of distributive justice and theories of authority. Distributive justice theories focus on the conditions under which people consider rewards as just. Theories of authority focus on conditions where people feel morally obligated to follow or obey the system in power. Both theories involve accepting something, either rewards or the system of power, as right, the consequences of which are the stability of some system. It is one of Zelditch's theories of authority, legitimacy, with which I am concerned in the current study. He summed it up nicely, "legitimacy is always a matter of voluntarily accepting that something is 'right,' and its consequence is always the stability of whatever structure emerges from the process" (p. 40).

## **Explaining Legitimacy**

One method used to explain legitimacy is consensus theory. In a true consensus theory (a) there is voluntary acceptance of the social order, (b) belief in norms and values is the basis for consent, (c) leaders and followers share the same norms, values, and beliefs, (d) this consensus makes the norms and values “right,” therefore legitimate and, (e) the legitimacy is a requirement for the stability of the social order (Parsons, 1963).

Another approach to explaining legitimacy is conflict theory. Conflict theory assumes: (a) self-interest drives action and order; (b) there is conflict between the real interests of the rulers and the ruled; and (c) power makes rules binding. However, (d) power alone will not make people believe a rule is right; (e) the real interests of the ruler and the ruled are masked by rituals, myths, and ideology thereby legitimating the rules, making them right; and (f) in the long run, pure power is unstable without legitimacy, which, therefore, is a prerequisite of any social order (Zelditch, 2001).

## **Gaining Legitimacy**

Definitions of legitimacy are varying, but researchers generally agree on a perception that the actions of the person or organization in question are just or proper within some system of beliefs or values (Suchman, 1995; Tyler, 2006; van der Toorn, Tyler, & Jost, 2011). The perception piece of this definition is not inconsequential. It should be noted strongly that the status of being regarded as legitimate is bestowed only by the perceiver, or in the case of a group, perceivers. One either is or is not legitimate through the perception and with the consent of each individual or group with whom one interacts (Hurd, 1999).

There are several actions leaders can take to make them legitimate in the eyes of these beholders, and there are certain characteristics leaders can exhibit that would make their subordinates perceive them as legitimate. Research agrees that procedural justice is one such characteristic (Elliott, Thomas, & Ogloff, 2011; Ford & Johnson, 1998; Tyler, 2006; van der Toorn et al., 2011). When subordinates think the procedures their bosses use to exercise authority are fair the subordinates tend to perceive the leader as legitimate (van der Toorn et al., 2011). Fairness equating to legitimacy is a perception seen across a wide spectrum of situations. From legal proceedings to the boardroom of big business, superordinates who wield their authority fairly, especially treating subordinates with dignity and respect and giving them a voice, are more likely to be seen as legitimate and to have their rules followed and decisions accepted (Tyler, 2006)

Fair means different things to different people. Likewise, there are different ideas on how people think about and decide what is fair. Blader and Tyler (2003) developed and tested a four-component model of procedural justice. This model describes how people determine whether a particular decision was made fairly. The model shows two dimensions: procedural function, focused on the role of information about decision-making procedures; and procedural source, focused on the source of that information. The procedural function dimension has two functions: quality of decision making and quality of treatment. Likewise, the procedural source has two functions: group or formal influences and individual or informal influences. Hence the final model yields four components: formal decision making, formal quality of treatment, informal decision making, and informal quality of treatment. Blader and Tyler (2003) proposed, and their

research supported, these four components as exerting influence on assessments of fairness.

Another reason subordinates will assign the characteristic of legitimacy to their bosses is outcome favorability. When subordinates have experienced favorable outcomes, they are more likely to view their leaders as legitimate and therefore are more willing to comply (van der Toorn et al., 2011). Recent research by van der Toorn et al. (2011) suggested outcome dependence as a third major antecedent to perceived legitimacy. The authors drew on system justification theory which says, in part, that people who are highly dependent on a system's status quo (e.g., work place policies, police enforcement techniques, etc.) are more likely to perceive the rules and policies of that system as fair and desirable. Consequently, those who are highly dependent on a system or a particular person for a positive outcome are more likely to ascribe positive characteristics to that system or person (van der Toorn et al., 2011). If people perceive the system as fair they should also see the individuals within the system (e.g., the city worker, the policeman, etc.) as fair and, for our purposes, legitimate (van der Toorn et al., 2011).

### **Effects of Legitimacy**

Procedural fairness and legitimacy have been shown to produce positive results in different settings. In recent years, these concepts have been linked to positive responses from group members in survey as well as experimental research. De Cremer and van Knippenberg (2002) conducted a study to determine the relationship between a leader's procedural fairness and cooperation of group members. Dutch business school students read a scenario in which they were part of a group of managers who competed for

organizational resources and rewards. Individuals were to invest resources (\$18,000) in a company-led investment plan. The success or failure of the investment plan, and therefore, individual benefits, hinged on the groups' cooperative investments. If the group invested more than \$63,000, individuals would receive bonuses. If the group investment was less than \$63,000, individuals would lose their initial investment. Participants were randomly assigned to either a voice, the leaders of their groups wanted to hear their opinions about decision making (the fair condition), or a no-voice, the leaders would not ask for individual opinions (the unfair condition), condition. To determine level of cooperation, participants were asked to indicate how much they would invest. Finally, participants were asked to what extent they thought the procedures used were fair. Results indicated a significant effect of procedural fairness on the level of contributions and showed that conditions were perceived as more fair and contributions were higher in the voice condition.

De Cremer and van Knippenberg (2002) showed the positive results brought about by procedural fairness in an experiment using business school students in a laboratory setting. Procedural fairness and legitimacy have been shown to be effective in real-world settings as well. Tyler and Blader (2005) studied the effects of two approaches to fostering employee rule-following behavior: the command-and-control approach and the self-regulatory approach (see my discussion of these approaches above). They sent surveys to employees within a U.S. division of a large multinational financial services company. Respondents answered questions assessing their judgments of legitimacy, value congruence, use of command-and-control strategies, and rule-following behavior. Regression analyses of these data showed employees' judgments

about the legitimacy of authority figures within the organization significantly explained policy adherence and employee rule breaking. The use of command-and-control strategies did not significantly explain employee rule following. Tyler and Blader (2005) emphatically stated that “reliance on a self-regulatory approach more effectively fosters employee rule following than does reliance on a command-and-control approach” (p. 1148).

Another real-world example of research showing a positive relationship between procedural justice, legitimacy, and positive behaviors among group members is a study conducted at a maximum security prison in Slovenia. Reisig and Mesko (2005) examined the records of and interviewed 103 prisoners located in the Central prison near Ljubljana, Slovenia. The purpose of the study was to determine if the procedural justice judgments of the inmates and their perceived legitimacy of prison officials were associated with lower levels of prisoner misconduct. Prisoners were interviewed regarding personal characteristics, experience with the Slovene justice system, their relations to prison staff, and their attitudes regarding the use of violence. Additionally, inmates were asked to evaluate prison officer behaviors and to rate their sense of obligation to obey officers’ rules. Finally, prisoners were asked to self-report regarding rule violations. Researchers also examined prisoners’ records to determine documented rule infractions. Regression analysis showed prisoners who reported prison guards as treating them fairly (procedural justice) reported less misconduct and, according to prison records, actually had less misconduct.

Perceived legitimacy has many other benefits as well. Aside from the immediate benefit of workers following rules and complying with directives, Tyler and Blader

(2000) asserted that when workers experience fair conditions they can commit to the organization. This commitment leads, Tyler and Blader say, to increased cooperation, rule-following, and even extra efforts to help the organization. Legitimacy breeds a sort of reservoir of support. This *saved-up* support is used in lean times when it may be harder to convince workers to stay late, work more hours, etc. In other words, legitimacy, and the characteristics that lead to it, breeds loyalty (Tyler, 2006). Additionally, perceptions of legitimacy breed further perceptions of fairness; when people receive an unfair decision from someone whom they have previously assessed as legitimate, they are less likely to perceive that decision as being unfair (Hegtvedt & Johnson, 2000).

### **Summary**

Legitimacy means others generally perceive the actions of another (usually a superordinate) as proper within the bounds of the system in which the superordinate (and usually those others) operate. Superordinates achieve legitimacy through fairness. If they fairly enforce procedural rules and treat subordinates with respect, they will likely be seen as legitimate. Because of this legitimacy, superordinates are likely to see more compliance, less rule-breaking, and an increase in subordinate commitment.

### **Legitimacy in the Classroom**

Although there are many studies on the use of power and authority in the classroom, very few have examined legitimacy in that same environment. Way (2011) conducted a study designed to assess the relationship between classroom discipline, students' perception of that discipline, and disruptive behavior in the classroom. She used data from the National Education Longitudinal Study of 1988 to obtain a sample of

nearly 11,000 students and their teachers from over 1,100 schools. Way took data from measures of classroom disruption; school discipline policy; students' perceptions of strictness of school rules, fairness of discipline, the legitimacy of school-based authority, and teacher-student relationships; and teacher attributes and perceptions.

Results showed there were no significant differences in disruptive behavior between students in schools where more severe punishments were the norm and students in schools with less severe punishments (Way, 2011). Additionally, results indicated a strong negative relationship between students' views of their teachers and their classroom disruption scores. In other words, students who viewed their teachers more positively reported fewer classroom disruptions (Way, 2011). Of particular interest to the current study, results also showed that students who viewed rules to be fair and who perceived their teachers and school rules to be legitimate had lower scores on the classroom disruption measure.

### **Transformative Experience**

I used the extent to which students perceived they had a transformative experience at Squadron Officer School as an outcome variable in the current study. A brief discussion of the literature on transformative experience follows.

Pugh (2002) described transformative experience as being “defined by three principle qualities: 1) active use of the concept, 2) an expansion of perception, and 3) an expansion of value” (p. 1103). It is a quality of an educational event whereby the student gains a new lens through which to see the world. That lens is made up of the concepts of a lesson or set of lessons. Students who have had transformative classroom experiences

have expanded perceptions and values about that concept and actively use those expanded perceptions and values to look at the world differently (Pugh, 2002).

Transformative experience-based education focuses on enhancing, growing, and transforming everyday experience and stands in stark contrast to the vast majority of educational efforts that mostly focus on conveying information (Pugh, Linnenbrink-Garcia, Koskey, Stewart, & Manzey, 2010). According to transformative experience theorists, acquiring knowledge of a concept is good, but not enough for a complete learning experience. Learning must lead to an expanded experiencing of the world (Pugh et al., 2010).

Transformative experience researchers have broken their theory into three major components: motivated use, expansion of perception, and experiential value (Pugh, 2011). Motivated use refers to behavioral engagement. Students who have undergone a transformative experience try out their new ideas in everyday experience even in situations where the use of these ideas is not required. The students who see penguins at the zoo and begin to think in terms of evolutionary theory have spontaneously used ideas from the classroom. This is motivated use.

When those same students see the penguins and begin to ask questions about the penguins' evolutionary history, they are demonstrating expansion of perception. Expansion of perception is using an idea to see the world in a new way and is a possible result of motivated use (Pugh, 2011). Expansion of perception corresponds with the cognitive dimension of engagement.

The final component of transformative experience involves attaching more meaning to those concepts that are more fully perceived. When students begin to see the

study of animals, perhaps penguins, as more interesting, more meaningful because of a chapter on evolution, they are demonstrating the concept of experiential value. The concept of experiential value corresponds to the affective dimension of engagement.

With transformative experience, learning does not stay in the classroom, tucked away inside a locker between a math book and the latest composition on Mark Twain; students take the learning with them. They take it with them and see the world differently because they do. Thus, transformative experience sits near the pinnacle of educational goals. It surpasses the gaining of knowledge and, leveraging the concepts of transfer, conceptual change, and task value, moves students into the Deweyan ideal of enriched and expanded everyday experience (Pugh, 2011).

### **Summary**

Theorists agree that in any relationship power is at work. The influence one person in the relationship has over the other plays an important part in how the relationship works as well as how the two actors function and/or benefit within the power relationship. It is particularly germane to the current study that the perception of the subordinate regarding the relationship is critical to how effective the influence of the superordinate is. In order to effectively influence another, superordinates must be seen as having some right to wield their influence, and this right is granted by subordinates. The right to influence is known as legitimacy.

Teachers have a particularly difficult type of influence relationship with their students. Teachers must create an environment in which students can stay engaged. To do so, these teachers must maintain order. Research has shown that to be able to do this, teachers should cultivate their authority relationship with their students. Studies have

shown that teachers who use soft-power techniques are most effective at growing this authority relationship and therefore establishing and maintaining the type of environment necessary for learning. Their students experience better outcomes.

Legitimacy is the cornerstone of this authority relationship. If teachers are perceived as legitimate, the authority relationship will flourish. More positive student outcomes will follow. Unfortunately, research has been sparse regarding teacher legitimacy. The current study is an initial attempt to rectify that shortcoming, by specifically looking at student perceptions of teacher legitimacy and identifying the linkage between those perceptions and student outcomes.

This chapter provided a review of power, authority, and legitimacy literature that supports the purpose, the research questions, and the hypotheses of the current study. The chapter included a discussion of the use of each in classrooms settings with an emphasis on how each effects student outcomes. The next chapter provides details on the research methodology used to answer the current study's research questions and test its hypotheses.

### **CHAPTER III**

#### **METHOD**

The preceding chapters of this dissertation provided the rationale and purpose for this study, established the research questions and hypotheses, discussed the contributions of this study to the body of research on teacher education, and provided a review of relevant literature. This chapter details the research methodology used to explore the relationship between perceived teacher legitimacy, final course grades, and transformative experience. I break with convention slightly here to briefly discuss a previous study I did that influenced the current study. I do so here because the methods are where the previous study most influences the current study. My previous work informed how I conducted focus groups, how I gathered data to support my research questions, and gave some initial structure to the construct of teacher legitimacy. After discussing the previous study, I fall back in line with tradition by detailing the current study. I outline methodology used in developing a measure and validating scores from the measure of perceived teacher legitimacy. I then provide a description of the study participants. I go on to itemize the protocols and instruments used to gather data for the study. Finally, I discuss the statistical and psychometric procedures used to analyze the data.

#### **Previous Study**

In 2011, I conducted a two-phase study, the results of which informed methods used in the current study. I discuss pertinent details of the previous study below.

## **Participants**

The sampling frame for the previous study was the student population at the U.S. Air Force's Squadron Officer School (SOS) located at Maxwell Air Force Base in Montgomery, Alabama. At the time, SOS was a five-week course for Air Force Captains to learn leadership theory and application, Air Force history, the profession of arms, officership, and problem solving (Air University Website, n.d.). The previous study was conducted in two phases. During phase one, 12 students from SOS class 11G, which ran from September 12, 2011 to October 14, 2011, at Maxwell Air Force Base, Montgomery, Alabama, were randomly selected from the 416-member student roster to participate in focus groups. Chi-squared tests of independence did not show significant differences between the participants in the focus groups and the remainder of SOS class 11G on key demographic variables.

During phase two, 125 students from SOS class 11G completed a survey designed to identify characteristics of legitimate teachers. This survey was made available through the SOS Blackboard website during the last week of the five-week SOS curriculum. Chi-squared tests of independence did not show significant differences between the 125 participants and those in class 11G who did not participate, with the exception that married students were underrepresented and prior service students, those who served as enlisted members before becoming officers, were overrepresented in the sample of students taking the survey.

## **Instruments**

**Focus Group Protocol.** In the previous study, I conducted four focus groups with five participants in each group with the purpose of eliciting characteristics of legitimate teachers. After I summarized the literature on legitimacy and ensured participants were familiar with the concept of legitimacy, I asked participants to consider the concept of legitimacy as applied to teachers and asked questions to elicit characteristics of legitimate teachers.

**Characteristics of Legitimate Teachers Survey.** This survey consisted of a list of 38 teacher qualities drawn from the phase one focus groups and from research into authority legitimacy and teacher effectiveness measured on a 5-point Likert-type scale. Participants rated each of the teacher qualities with regard to its importance to teacher legitimacy. After reading a summary of legitimacy research to familiarize participants with the concept of legitimacy participants were presented with a stem which read: “With regard to teacher legitimacy, how important is it that a teacher be:” The stem was followed by one of 38 teacher qualities such as “Approachable,” “Creative,” “Fair,” and “Patient.” The same stem was presented with each of the 38 qualities. Participants then selected the scale option they felt most accurately reflected that item’s importance as related to teacher legitimacy. (See Appendix A for the survey used in my previous study.) Reliability estimation yielded a Cronbach’s alpha of .92 for responses to all 38 items.

## **Data Analysis**

**Focus Group Data.** After completion of the focus groups, I held a panel discussion with education and training experts, the objective of which was to consolidate the perceptions of the focus groups into a list of characteristics that could be added to the list I had already developed for inclusion in the survey for phase two. The panel collaboratively determined a final list of characteristics, not already on the phase two survey, that were representative of focus group perceptions. These consolidated data were used in the survey given to participants in phase two of the present study.

**Survey Data.** I wanted to determine if the structure of the 38 items on the teacher characteristics survey would lend itself to a definition of teacher legitimacy. Therefore, I conducted an exploratory factor analysis (EFA) on the results of my survey (Henson & Roberts, 2006).

## **Results**

**Focus Groups.** The panel discussed and consolidated ideas and perceptions from each of the focus groups. The result was the final list of eight characteristics: confident, educated, expertise, honest, open-minded, professional, respectful, and unbiased.

**Survey.** I added the 8 items from the focus groups to the 30 I gleaned from legitimacy and teacher effectiveness research for a total of 38 items on the survey. A maximum likelihood factor analysis (MLFA) of scores from the survey with a Promax rotation yielded a six-factor solution as the most interpretable. I named the six factors that emerged compassion, engagement, influence, structure, justice, and proficiency. Based on the anchors of fairness from the legitimacy research and expertise from the

focus groups, the factors “justice” and “proficiency” together indicate a construct of legitimacy.

### **Current Study**

#### **Participants**

The sampling frame for the study was the 699-member student population at Squadron Officer School (SOS) located at Maxwell, AFB in Montgomery, Alabama. The target population represented by this sampling frame was post-graduate adult learners. After applying for and gaining Institutional Review Board approval as well as approval from the Squadron Officer School commander (see Appendices B and C, respectively), I conducted the study in three phases. During phase one, 72 students from SOS class 13C, which ran from March 2013 to May 2013, were randomly selected from the student roster to participate in four focus groups. I used information from these focus groups to develop items for the Teacher Legitimacy Scale (TLS), a new instrument. Demographic data for SOS class 13C, as well as for participants in each phase of the study can be found in Table 2.

In phase two, I conducted a pilot study in order to assess psychometric properties of scores from the TLS and refine the TLS prior to using it in phase three. Participants for the pilot study consisted of 67 students from SOS class 13C.

Table 2

*Demographic Data for Squadron Officer School Class 13C and Study Participants*

| Variables         | Class   |      | Focus Groups <sup>a</sup> |      | Pilot Study <sup>b</sup> |      | Survey  |      |
|-------------------|---------|------|---------------------------|------|--------------------------|------|---------|------|
|                   | #       | %    | #                         | %    | #                        | %    | #       | %    |
| Gender            | N = 699 |      | N = 72                    |      | N = 67                   |      | N = 427 |      |
| Male              | 585     | 83.7 | 61                        | 84.7 | 59                       | 88.1 | 346     | 81.0 |
| Ethnicity         | N = 699 |      | N = 72                    |      | N = 66                   |      | N = 423 |      |
| White             | 555     | 79.4 | 58                        | 80.6 | 54                       | 80.6 | 340     | 80.4 |
| African American  | 46      | 6.6  | 6                         | 8.3  | 6                        | 9.0  | 20      | 4.7  |
| Hispanic          | 43      | 6.2  | 4                         | 5.6  | 3                        | 3.0  | 15      | 3.5  |
| Asian             | 32      | 4.6  | 2                         | 2.8  | 1                        | 1.5  | 25      | 5.9  |
| American Islander | 3       | .4   | 0                         | 0.0  | 0                        | 0.0  | 3       | .7   |
| Other             | 20      | 2.9  | 2                         | 2.8  | 6                        | 9.0  | 20      | 4.7  |
| Education Level   | N = 665 |      |                           |      | N = 67                   |      | N = 427 |      |
| Bachelor's        | 369     | 52.3 |                           |      | 29                       | 43.3 | 202     | 47.3 |
| Master's          | 267     | 38.2 |                           |      | 34                       | 50.7 | 208     | 48.7 |
| Other             | 32      | 4.5  |                           |      | 4                        | 6.0  | 17      | 4.0  |

Table 2 (continued)

| Variables                  | Class          |      | Focus Groups <sup>a</sup> |      | Pilot Study <sup>b</sup> |   | Survey         |      |
|----------------------------|----------------|------|---------------------------|------|--------------------------|---|----------------|------|
|                            | #              | %    | #                         | %    | #                        | % | #              | %    |
| Rank                       | <i>N</i> = 699 |      | <i>N</i> = 72             |      |                          |   | <i>N</i> = 424 |      |
| Captain                    | 675            | 96.6 | 71                        | 98.6 |                          |   | 406            | 95.1 |
| DAFC                       | 16             | 2.3  | 0                         | 0.0  |                          |   | 13             | 3.0  |
| 1 <sup>st</sup> Lieutenant | 4              | .6   | 0                         | 0.0  |                          |   | 2              | .5   |
| 2 <sup>nd</sup> Lieutenant | 3              | .4   | 1                         | 1.4  |                          |   | 3              | .7   |
| Status                     | <i>N</i> = 699 |      | <i>N</i> = 72             |      |                          |   | <i>N</i> = 427 |      |
| Active Duty                | 623            | 89.1 | 67                        | 93.1 |                          |   | 380            | 89.0 |
| Foreign                    | 21             | 3.0  | 0                         | 0.0  |                          |   | 5              | 1.2  |
| National Guard             | 20             | 2.9  | 4                         | 5.6  |                          |   | 10             | 2.3  |
| Air Force Reserve          | 18             | 2.6  | 1                         | 1.4  |                          |   | 16             | 3.7  |
| DAFEC                      | 16             | 2.4  | 0                         | 0.0  |                          |   | 13             | 3.0  |

Table 2 (continued)

| Variables              | Class          |               | Focus Groups <sup>a</sup> |      | Pilot Study <sup>b</sup> |   | Survey         |      |
|------------------------|----------------|---------------|---------------------------|------|--------------------------|---|----------------|------|
|                        | #              | %             | #                         | %    | #                        | % | #              | %    |
| Squadron               | <i>N</i> = 699 |               |                           |      |                          |   | <i>N</i> = 426 |      |
| Blackhawks             | 112            | 16.0          |                           |      |                          |   | 70             | 16.4 |
| Bulls                  | 111            | 15.9          |                           |      |                          |   | 67             | 15.7 |
| Centurions             | 126            | 18.0          |                           |      |                          |   | 96             | 22.5 |
| Dragons                | 112            | 16.0          |                           |      |                          |   | 69             | 16.2 |
| Knights                | 126            | 18.0          |                           |      |                          |   | 63             | 14.8 |
| Tigers                 | 112            | 16.0          |                           |      |                          |   | 61             | 14.3 |
| Married                | <i>N</i> = 699 |               | <i>N</i> = 72             |      |                          |   | <i>N</i> = 424 |      |
|                        | 494            | 70.7          | 54                        | 75.0 |                          |   | 292            |      |
| Distinguished Graduate | <i>N</i> = 699 | <i>N</i> = 72 |                           |      | <i>N</i> = 427           |   |                |      |
|                        | 67             | 9.6           | 12                        | 16.7 |                          |   | 34             | 8.0  |

*Note.* The “class” column represents the sampling frame.

<sup>a</sup>Data on education level and squadron not obtained. <sup>b</sup>Data on rank, status, squadron, married, and distinguished graduate not obtained.

During the third phase of the current study, I presented a survey to the remaining students of SOS class 13C. The survey gathered information to assess psychometric properties of responses to the TLS, answer my research questions, and test my hypotheses. During this survey participants gave a legitimacy rating for their primary instructors, their perception of their own transformative experience, and answered questions to aid me in determining concurrent and discriminant validity of scores from the TLS.

### **Instruments**

**Generating Items.** The protocol for the focus groups in my previous study (Drake, 2012) worked fairly well and generated a list of characteristics of legitimate teachers. However, at times during the previous focus groups, discussions wandered into areas I considered outside the scope of teacher legitimacy (e.g., compassion, enthusiasm, etc.). Therefore, to keep current study participants focused on the concept of teacher legitimacy, I used a different interview technique to generate characteristics of legitimate teachers. I conducted four focus groups with 18 participants in each group to elicit characteristics the participants felt defined teacher legitimacy. I read focus group participants a summary of the social psychological concept of legitimacy. Participants heard how legitimate authority figures are able to accomplish their organization's goals through their subordinates' sense of obligation stemming from their being perceived as legitimate. I gave participants a summarized definition of legitimacy (i.e., a perception that the actions of the person or organization in question are just or proper within some system of beliefs or values). I then asked participants to consider the concept of legitimacy as applied to teachers.

To elicit characteristics of legitimate teachers, I used the critical incident technique described by Flanagan (1954). I asked participants to recall teachers they had had who they thought of as legitimate. I then asked participants to identify, with those incidents in mind, specific characteristics or behaviors the teachers exhibited that indicated the teachers' legitimacy (see Appendix D for the focus group protocol). I recorded participants' answers manually and via digital audio recorder.

At the end of each session, I conducted member checks. I reviewed each group's answers with the participants to ensure they were satisfied with the results I had recorded. Only after I had unanimous agreement from the participants on results did I end the focus group session.

I then analyzed the content of the focus groups' responses. I isolated characteristics and corresponding behaviors participants stated as showing legitimacy and noted the frequency with which these characteristics/behaviors were mentioned and I consolidated like behaviors. After examining frequencies and patterns of responses, I developed focus group data into an instrument that was used to determine perceived teacher legitimacy.

**Instrument Development.** The number of items on the TLS depended on the number and type of responses from the focus groups. The initial instrument contained 19 items and asked participants to describe the frequency of occurrence of behaviors of their present instructor on a 5-option Likert-type scale (1 = *My instructor never exhibits behaviors reflective of this characteristic*, 5 = *My instructor always exhibits behaviors reflective of this characteristic*). The format of the TLS was modeled after the format of the Teacher Behavior Checklist developed by Buskist, Sikorski, Buckley, and Saville

(2002). Participants were given a characteristic of legitimacy teachers may exhibit (e.g., Respectful) along with corresponding behaviors that define that characteristic (e.g., Does not humiliate or embarrass students in class, is polite to students [says thank you and please, etc.], does not interrupt students while they are talking, does not talk down to students) and then asked to indicate the scale option that best describes their response. A high score on the TLS indicates high levels of perceived teacher legitimacy (see Appendix E for the original TLS).

I conducted a pilot study on the original TLS developed from focus group responses. I performed Rasch analysis and an exploratory factor analysis on the pilot study data and refined the original instrument using the results of the Rasch analysis as well as feedback from pilot study participants. I deleted one item (*dependable*) due to Rasch misfit, combined response categories 1, 2, and 3 (resulting in a 3-option Likert-type scale [1 = *My instructor infrequently exhibits behaviors reflective of this characteristic*, 3 = *My instructor always exhibits behaviors reflective of this characteristic*]), and made other edits as suggested by pilot study participants (e.g., reworded “expects more of students” to read “expects more from students;” see Appendix F for the TLS used in the final phase of the current study). Along with items to determine perceived legitimacy, the survey given to participants in the current study also gathered information about student outcomes as well as provided information to be used in validating scores from the TLS.

**Student Outcomes.** I used two student outcomes as dependent variables in the current study. First, the phase three survey contained items from the transformative experience measure adapted from Pugh et al. (2010) to assess the degree to which students engage in transformative experiences in their academic setting. Pugh et al. (2010) developed a transformative experience (TE) measure designed to determine the degree to which students feel their learning experiences in certain subjects or classes have been transformative. The original TE measure consisted of 28 items rated on a four-point Likert scale ranging from *strongly disagree* to *strongly agree*. The TE measure assesses the three characteristics of transformative experience: motivated use, expansion of perception, and experiential value. However, Pugh et al. (2010) found Rasch analysis indicated an overall composite transformative experience score to be useful when interpreting results of this measure. Rasch item reliability of the original TE measure was .99 based on a sample of ninth and tenth grade students, but Pugh (personal communication, October 6, 2012) indicated he believed the instrument, with minor adaptations for the different academic setting, would work well with the sampling frame for the current study. I adapted Pugh et al.'s (2010) TE measure to fit the academic situation in which the current study took place. I replaced references to subject areas with the generic term SOS (e.g., I changed item 2: "I talk about adaptation and/or natural selection outside of class," to read "I talk about SOS concepts outside of class"). I made other, more global, adaptations where necessary to make the instrument fit the appropriate academic situation. Additionally, after examining Rasch analysis of data from the transformative experience measure from the current study, I removed six items (items 1, 2, 3, 11, 14, and 27) for scoring purposes due to item misfit. I made all

adaptations in consultation with the original author (Pugh, personal communication, October 6, 2012; see Appendix G for the original TE measure and Appendix H for the TE measure used in the current study).

For the second measure of student outcomes, I obtained participants' final course grades from the SOS registrar. SOS personnel determine end-of-course scores for students by consolidating grades on various assignments (e.g., briefings and papers) with scores on mid-term and final evaluations from flight commanders and peers. These grades and scores are then combined and tabulated in such a way as to produce a range of scores from zero to 100.

**Validating Scores on the Teacher Legitimacy Scale.** By examining the relationship between participants' performance on the TLS with performance on measures of other variables, I determined concurrent and discriminant validity. Concurrent validity refers to the correlation between scores on the measure in question and other measures designed to assess similar concepts. Strong, positive correlation indicates concurrent validity. I determined concurrent validity of scores from the TLS by administering a modified version of Muller's (1970) two-item measure of political legitimacy. The first question, modified for SOS was "What do you think ought to be your SOS instructor's main purpose?" This question sets participants' frame of reference for the second question, which was "How well do you think your SOS instructor has fulfilled his or her purpose?" This question was scored on a 7-point Likert-type scale with 1 being very poorly and 7 being very well. Muller originally used a reversed scale (i.e., 1 was very well and 7 was very poorly). I modified the scale so that high scores on the measure would indicate high legitimacy perceptions. I used participants' answers to

the second item as their scores on this measure. In a study designed to validate scores from Muller's measure, Fraser (1974) found evidence of construct and discriminant validity in a sample of University Kentucky students. Since Muller's instrument also measures legitimacy, scores on the TLS should have shared a relatively high percentage of variance with scores on the modified political legitimacy measure.

Discriminant validity refers to the correlation between the measure in question and other measures designed to assess different concepts. Negative (or very small positive) correlations indicate discriminant validity. In my previous study (Drake, 2012), exploratory factor analysis of data from my survey showed items indicating teacher caring (e.g., *concerned, understanding, friendly*) all factored together in a factor I labeled *compassion*. The *compassion* factor had very little shared variance (.28) with another factor that included items indicating legitimacy (*fair, unbiased, honest*), which I labeled *justice*. Using this information from my previous study, I theorized that compassion-type items would share little variance with legitimacy-type items, and looked for a measure of teacher compassion to use as a measure of discriminant validity in the current study.

The Perceived Teacher Caring scale (TCS; Teven & McCroskey, 1997) measures a perceived *closeness* between teacher and student. Thus, I theorized it would serve as a measure of discriminant validity for the TLS. The original TCS consisted of a nine-item bipolar scale with a seven-step continuum for responses. Participants were instructed to provide their opinions about their instructor, then given bipolar items such as *cares about me/doesn't care about me* and *insensitive/sensitive*. The polarity of four items was reversed to reduce item-response bias. All items were coded so that high scores indicated high perceived teacher caring. A reliability estimate for scores on the original TCS

during development was .95 and the correlation with another measure of teacher caring was .86 based on a sample of 235 students enrolled in communications classes at an Eastern university (Teven & McCroskey, 1997; see Appendix I for the TCS). After examining Rasch analysis of data from the TCS given in the current study, I removed three items (items 3, 8, and 9) for scoring purposes due to misfit. As such scores can range from 6 to 42 with higher scores indicating higher perceived teacher caring.

### **Data Analysis**

**Rasch Analysis of the Teacher Legitimacy Scale.** As an initial look into construct validity, I used Rasch analysis to examine the scores from the TLS. I first examined the item-person map and compared the item measure and person measure from the results (Gustafson, 1980). The item-person map should show the items spread across 3 logits (to indicate a good “spread” in item difficulty) and should show that the person mean would be in the same location as the item mean (indicating item difficulty and person ability are well-matched on the scale). To indicate proper targeting (i.e., proper alignment between items and persons), the item measure and the person measure should be identical. The farther apart they are, the more mistargeting in the scale (Gustafson, 1980).

Next, to examine item fit (whether items are measuring the same construct), I examined INFIT and OUTFIT parameter-level mean-squares, standardized Z scores, and point measure correlations (Linacre, 2002). Mean-square fit statistics between 0.5 and 1.5 indicated an item was productive for measurement. Standardized Z scores between -1.99 and 1.99 indicated the item was productive for measurement. Finally, the difference between the calculated point measure correlation for the items and

the expected point measure correlation should be minimal. I looked at the relative differences for all the items. Any item that had a large difference relative to the other items was suspected of measuring a different construct (Linacre, 2002).

**Exploratory Factor Analysis of the Teacher Legitimacy Scale.** I wanted to determine if there was an interpretable underlying structure to the legitimacy behaviors from the TLS. Therefore, I performed factor analysis on data gathered from the pilot study (Tabachnick & Fidell, 2007). Because no prior theory existed for the structure into which these behaviors would fall I conducted exploratory factor analysis (EFA) to determine the structure (Henson & Roberts, 2006), using SAS version 9.3.

To conduct the EFA for the current study, I analyzed the correlation matrix and performed a principle axis factoring factor analysis. I used a common factor method because I was attempting to identify latent constructs from my set of variables. As the correlation matrix is quite large, it is available upon request.

After extraction, I conducted parallel analysis to determine the initial number factors to be retained (Horn, 1965). Parallel analysis aids in determining the number of factors to retain by generating random data sets with the same number of variables and comparing the average eigenvalues of the random data sets to those of the actual data. When the eigenvalues of the random data sets are larger than those of the actual data, the additional factors from the actual data can essentially be discarded. Software output shows a line on the scree plot that represents the eigenvalues of the random data sets. Factors below the line can be thought of as noise and should not be retained (Tabachnick & Fidell, 2007).

After extraction, examination of parallel analysis indicated two factors. Thus, I used a rotation to improve the interpretability and utility of the results (Tabachnick & Fidell, 2007). Because I believed any teacher legitimacy factors to be correlated, I used an oblique rotation. Specifically, I used a Promax rotation, which rotated the orthogonally rotated solution again to allow for the correlations among factors (Tabachnick & Fidell, 2007). Promax rotation clarifies the correlations among factors and therefore maximizes simple structure (Tabachnick & Fidell, 2007).

As a final consideration, I examined the solutions for interpretability. Some questions I examined in order to determine interpretability were: Does the structure make sense? Does it answer the research questions for the current study? Will it be useful in future research?

After determining the number of factors to be retained, I determined which variables were salient within their respective factors. A pattern or structure coefficient of 0.3 meant 9% of the variance was explained by the factor. This magnitude was regarded as a reasonable criterion for salience (Kline, 1994). Thus, I examined the pattern and structure coefficients and used coefficients of 0.3 as salient and retained only those variables that load under a particular factor at a 0.3 level or higher.

**Confirmatory Factor Analysis of the Teacher Legitimacy Scale.** Having determined an interpretable underlying structure to the behaviors on the TLS using data from the pilot study, I wanted to substantiate that structure using data from the final survey. Confirmatory factor analysis (CFA) is used instead of exploratory factor analysis when the structure of the model for the data is known (or at least, hypothesized) a priori (Lei & Wu, 2007). Thus, I used “R” version 3.0.0 with the Lavaan package loaded and a

diagonally weighted least squares estimation procedure (Mindrila, 2010) to conduct a CFA with these data.

CFA allows researchers to specify the number of factors in a given model and which items will load on which factors. As I had multiple indicators of a single dimension for the construct of teacher legitimacy, I specified a single factor for my CFA. I was principally using the information from the CFA to assess construct validity. Thus, I interpreted the chi-square statistic as well as the Root Mean Squared Error of Approximation (RMSEA), the Tucker-Lewis index (TLI), and the comparative fit index (CFI) fit indices to determine how well my data fit my one-factor model (Sun, 2005).

Rather than strict adherence to cutoff values to determine fit using these indices, researchers rely on general rules for acceptable fit (Schreiber, Stage, King, Nora, & Barlow, 2006). To determine goodness of fit in the current study, the ratio of chi-square to degrees of freedom should be  $\leq 3$ , the RMSEA should be  $< .06$  to  $.08$  with confidence interval, and the TLI and CFI should be  $\geq .95$  (Schreiber et al., 2006). It should be noted however, that Iacobucci (2010) suggests not taking any of these rules of thumb too seriously.

Finally, I examined the parameter estimates from the CFA. Specifically, I inspected the factor loadings for statistical significance.

**Concurrent and Discriminant Validity.** I examined the shared variance between scores on Muller's political legitimacy measure (Muller, 1970; as described above) and scores on the TLS developed for the current study to determine concurrent validity of scores on the TLS. Likewise, I examined shared variance between scores on

the Perceived Teacher Caring scale (Teven & McCroskey, 1997) and scores on the TLS to determine discriminant validity of scores on the TLS.

In the absence of definitive guidance on exactly how much shared variance was too much or too little, I used some independently determined cutoffs to determine if these measures indicated concurrent and/or discriminant validity. For concurrent validity, I looked for shared variance between 64% and 36% ( $.60 > r > .80$ ). Higher than 64% shared variance would indicate the TLS and the Muller were identical (or nearly identical) measures. Lower than 36% would indicate the TLS was measuring a construct unrelated to legitimacy as measured by Muller.

For discriminant validity, I looked for shared variance below 36% ( $r < .60$ ). Anything below 36% shared variance would indicate the TLS and TCS were measuring different constructs. For the purposes of this study, the lower the shared variance the better.

**Multiple Regression.** In order to determine whether the perceived legitimacy rating of an instructor explains perceived transformative experience and final course grade, I conducted a regression analysis of these data. As I needed to control for several extraneous variables, and therefore had several independent variables, I used hierarchical multiple regression for these analyses. I conducted separate regressions for each of my two dependent variables using SPSS version 21. As the regression contained several variables and few added substantial increments to  $R^2$ , I report results using the Model I error approach to test  $R^2$  at each step.

Regression is used to evaluate the relationship between a dependent variable and several independent variables (Tabachnick & Fidell, 2007). Regression and correlation

are often used interchangeably. However, whereas correlation normally refers to a simple assessment of the relationship between variables, regression normally refers to an analysis of prediction or explanation. As I was attempting to determine if teachers with higher ratings of legitimacy tended to produce students with higher outcomes, I wanted to see if legitimacy explained outcomes. Therefore, I used regression to analyze data from the survey used in phase three of the current study and I analyzed the significance of  $R^2$  (the estimate of variance explained by the variables), specifically  $R^2$  change (because scores on the TLS were the last variables analyzed in the hierarchical regression), to answer my research questions and test my hypotheses.

As with many studies, there were, in the current study, variables outside of those of interest to the study that may affect the dependent variables in the study. In a regression, the effect of these extraneous variables can be controlled for by using hierarchical regression analysis (Pedhazur, 1997). With this method of regression, researchers can identify the proportion of variance accounted for by the independent variable (or set of independent variables) because that variance is partitioned incrementally. This incremental variance partitioning is accomplished by entering the variables into the regression equation at different points. I then examined the portion of variance explained by the variables at the appropriate step of the equation ( $R^2$  change) to determine if a significant portion of variance was explained by the variables of interest. I ran each regression in four steps.

I entered previous education, instructor experience, gender, and product variables calculated from previous education and gender together (to test for interaction) at the first step of my regression. Due to the process of assignment of students to instructors, these

variables were fairly randomly spread across the class. Because of this random spread, I did not expect the variance explained by these variables to be significant. They did, however, need to be controlled for.

For the current study, there was anecdotal evidence that the accompanied students (those students whose spouses have accompanied them to SOS) usually do better as a group. In a given class, these students are assigned to the same student squadron on a rotating basis. This squadron usually finishes ahead of the other squadrons in academic performance. In finer detail, the flights that have accompanied students (there are usually not enough accompanied students to fill an entire squadron so three or four flights of students will be comprised of mostly accompanied students) are typically competitive for the Chief of Staff trophy, given to the top performing flight in the school. I entered squadron of assignment by itself at the second step of the regression and, although not the primary purpose of the regression, I was, thus, able to provide SOS faculty and leadership with statistical evidence of the significance of the accompanied squadron. More specifically, this analysis indicated if being in the accompanied squadron explains a significant amount of variance in student outcomes after controlling for students' previous education, instructor experience, and gender.

Finally, as I was interested in knowing the variance in student outcomes explained by teacher legitimacy after controlling for students' previous education, instructor experience, gender, and squadron of assignment, I entered scores on the TLS at step three of the regression equation. At the final step of the equation, I entered the product variable calculated from gender and TLS score to test for interaction. None of the interactions were significant, so I reran the regressions in three steps without the

interactions. I then examined the final (from step three)  $R^2$  change to determine if it was significant. The presence or absence of significance of  $R^2$  change at this step provided the answers to my research questions and evidence of support of my hypotheses.

For the current study, I used a familywise significance level ( $\alpha$ ) of .05. However, since I ran multiple tests, when conducting analyses, I used a more conservative  $\alpha$  for each test as determined by the formula

$$\alpha_e = \frac{\alpha_f}{n}$$

where  $\alpha_e$  is the significance level of each test,  $\alpha_f$  is the desired familywise significance level, and  $n$  is the number of tests being run. As I proposed two dependent variables, perceived transformative experience and end-of-course score, I ran two separate regression analyses with three steps in each, therefore, I performed six F tests. Thus, when running analyses for the current study, I entered a significance level of  $.05/6 = .0083$  for each individual test. This resulted in the desired familywise  $\alpha$  of .05.

The use of multiple regression equations for the current study instead of multivariate regression simplified the procedures while still providing more than adequate results. I acknowledge the loss of statistical power resulting from using multiple tests and assert that for the purposes of the current study the loss of power did not affect interpretation of the results.

**Regression Diagnostics.** The appropriate interpretation of statistical analysis is based on the presupposition that the data analyzed adhere to the rationale on which the analysis is founded. Researchers (and consumers of their research) assume the data adhere to these rationales when interpreting (or reading interpretations of) the results of statistical analysis. It is extremely important that researchers check these assumptions

prior to interpreting any results from statistical analyses. As Pedhazur (1997) pointed out “knowledge and understanding of when violations of assumptions lead to serious biases, and when they are of little consequence, are essential to meaningful data analysis” (p. 33). Accordingly, prior to interpreting the results of the proposed regressions, I investigated the extent to which the data from the phase three survey met assumptions regarding regressions.

Assumptions for regression can be grouped into three types: (a) error-free measurement, (b) model specification, and (c) assumptions about residuals (estimates of statistical error). Although, no measurement can be completely error-free, it is especially important that scores on the measures used to gather data for regression analysis be as reliable as possible, as lower reliability of these measures can lead to underestimation of the regression coefficient and/or increased standard error of estimation. Measurement error in the scores obtained from instruments used to measure independent variables cause an underestimation of the regression coefficient, resulting in the suggestion of a smaller relationship. Thus, researchers may not find significance when it is actually present. Measurement error in the scores obtained from instruments used to measure dependent variables can lead to an increase in the standard error of estimate, resulting in a loss of statistical power and an increase in the chances of Type II error. To ensure this assumption is met in the current study, I examined the reliability of respondents’ scores from the various measures used as well as the reliability of respondents’ end-of-course scores. As the TLS was being developed specifically for the current study, I conducted a pilot study to determine reliability and made necessary adjustments before using it. I also examined reliability estimates from phase three of the current study.

There are three parts to the model specification assumption. The first is that the regression of the dependent variable on the independent variables is assumed to be linear. Violations of the assumption of linearity can lead to a downward bias of the regression coefficients. To ensure this assumption has been met in the current study, I examined the residual scatter plots. Residual plots are scatter plots with the residuals plotted against the predicted value of the dependent variable. If the regression is indeed linear, the residual plot would resemble a broad horizontal band of points; the absence of any discernible pattern in the residual plot indicates the regression is linear.

The second part of the model specifications assumption is that all important independent variables have been included. Failing to include all relevant variables can lead to biased parameter estimates if the omitted variable is correlated with one or more independent variables. Similarly, failure to include all relevant variables can lead to non-random residuals if the omitted variable is correlated with the independent variable. This occurs because any variables omitted are naturally included in the error term. Thus, the error term was correlated with the independent variable because one of the variables included in it is correlated with the independent variable. This results in another assumption violation that I discuss presently. Finally, if the omitted variables are correlated with the dependent variable, standard errors of the dependent variable would have been inflated. I examined current study data for this fairly serious assumption violation by looking for a broad horizontal band of points in the residual plot. A pattern in the residual plot would have indicated omitted variables.

The final part of the model specifications assumption is that no irrelevant variables have been included. Including irrelevant variables in a regression equation can

lead to inflated standard errors of regression coefficients. This inflation of the standard errors leads to decreased statistical power and a failure to find significance when it is actually present. If I suspected I may have had irrelevant variables, as indicated by their lack of significant contribution or their relatively large standard errors, I would have removed them from the model and conducted the regressions again. If the standard error of regression coefficients decreased, this would indicate the removed variable was causing the inflation and should not have been included in the model.

Two procedures helped me avoid violation of the model specification assumptions while conducting the current study. I conducted a pilot study using the model for the current study. After running regressions on the data from my pilot study, I checked assumptions and, where necessary, made corrections so those assumptions would not be violated during the final study. I also relied on the thorough literature review to inform my selection of independent variables. I included all variables, and only those variables, indicated by the literature review.

The final set of assumptions concerns the residuals themselves. The assumptions are that residuals have a mean of zero, they are random, they are normally distributed, and they have equal variance (homoscedasticity). Data output from SPSS showed the means of the residuals were zero.

It was expected that residuals would not be correlated with each other, the independent variables, or the dependent variable. The absence of correlated residuals would suggest the residuals were random. As noted earlier, I examined the residual plot to ensure the residuals were random. Patterns in the points on the residual plot would

indicate non-random residuals. If residuals were not random, the  $F$ -tests and  $t$ -tests used to determine significance of the regression results could not be trusted.

It was also expected that the residuals would be normally distributed around the regression line for all values of the independent variable. I examined a histogram and probability-probability (P-P) plot of the residuals to identify violations of this assumption. A histogram is a simple visual representation of the distribution of the residuals and should show the characteristic normal bell curve. A P-P plot shows the estimated cumulative probability plotted against the observed cumulative probability. On the P-P plot, a reference line runs from (0,0) to (1,1) and normal data will lie along the reference line. Data that deviate from the reference line considerably may be non-normal and should be investigated further. Fortunately,  $F$ -tests and  $t$ -tests in regressions are robust to this assumption violation. Thus, in the absence of severe violations I could rely on the results of my regression with these data.

Finally, it was expected that residuals would be homoscedastic. In the regression analysis for the current study, the parameter of interest was the estimate of variance explained by the variables being studied. This variance is shown by the squared multiple correlation and is denoted as  $R^2$ . If the residuals do not have equal variance (i.e., they are heteroscedastic)  $R^2$  may not be accurate for every level of each independent variable tested in the regression. I examined data for violations of the assumption of homoscedasticity by looking at the residual plot and the histogram. The broad band of points on the residual plot and a histogram showing the normal bell curve shape suggest homoscedasticity.

In addition to assumption violations, another factor regarding the data analyzed that may affect the results of a regression involves outliers. Pedhazur (1997) defined an outlier as “a data point distinct or deviant from the rest of the data” (p. 43). There are a number of reasons for outliers. Some involve human or instrument error. When a researcher mistypes a number while performing data entry (e.g., 55 instead of 5), or gives incorrect instructions to a participant, or when an instrument malfunctions and incorrectly records a response, an outlier may occur. Other outliers involve truly deviant data. When a participant scores unusually high on a test or has an unusually low blood pressure on a particular day, outliers can occur. However they occur, outliers need to be detected and dealt with, if necessary.

Cases with extreme values on the dependent variable can be detected by examining residuals. I accomplished this by examining the casewise diagnostics of the output from SPSS. I examined the standardized, studentized, and studentized deleted residuals. These three types of residuals each uses slightly different calculations to determine the final residual value, and can give conflicting information regarding whether a case is an outlier. However, examination of the three together often gives researchers a clear picture of outlier cases. In the casewise diagnostics printout, the outliers stand out from the other cases and can be readily identified.

An outlying value on one or more of the independent variable is known as leverage. Leverage has a maximum value of one and becomes larger as observations of a variable deviate further from the mean. Leverage is denoted as  $h$ . One rule of thumb suggests that  $h > 2p/n$  should be considered high leverage (Hoaglin & Welsh, 1978). Another rule of thumb suggests  $h > .2$  is high (Huber, 1981). I used both rules of thumb

in the current study and examined cases with leverage further to determine if they have influence on the regression results.

Cases identified with high leverage or as outliers do not necessarily affect results of analysis and should not be discarded without further investigation. I examined the influence of each outlier or leverage case before deciding to delete it from my analysis. Influential cases will likely be outliers on both the independent and dependent variables and as the name implies, their presence makes a difference in regards to the regression results. I examined two indicators of influence in the current study: DFBETA and Cook's D.

DFBETA is a property of a case that indicates the change in the regression coefficient if the case were removed from the analysis. A large DFBETA indicates a great influence. A rule of thumb is that DFBETAs  $> \frac{2}{\sqrt{n}}$  exert influence and should be considered for deletion (Belsley, Kuh, & Welsch, 1980).

Cook's D identifies cases whose influence is on the dependent variable, the independent variable, or both. Pedhazur (1997) advised to look at relative differences in Cook's D. Cases with large Cook's D values in relation to other cases may be exerting influence on regression results.

When DFBETA or Cook's D indicated influence, I deleted the potentially influential cases, one at a time, and reran my regression analysis to determine whether results are significantly different without the proposed influential cases. I present results from all analyses in Chapter IV, to allow readers to make their own decisions regarding which results to use.

A final, but not insignificant, diagnostic that must be performed is the detection of collinearity. Collinearity occurs when there is a correlation between two independent variables. This is called multicollinearity when the correlation is between more than two independent variables. Collinearity can lead to misleading results because although both independent variables may correlate similarly to the dependent variable, their correlation with each other can mask the contribution of one of the independent variables so that only the other independent variable shows significance in the regression. In some cases neither will be significant. Collinearity can also lead to underestimation of the regression coefficients and increased standard error of the regression coefficients.

Collinearity can be detected several ways when running regressions. I examined the correlations first. If any bivariate correlations had been high relative to other bivariate correlations, I would have been alerted to potential collinearity issues. Large discrepancies between the zero order correlations and either the part or partial correlations would suggest collinearity as well. Also, if unusually large changes in regression coefficients had occurred when variables were added or deleted, I would have suspected collinearity. Additionally, unusually large standard errors would have indicated possible collinearity. Finally, regression coefficients with unexpected signs (i.e., a negative coefficient when I expected a positive one) would have indicated possible collinearity.

When any of the above indicators occurred in my data analysis, I turned to three diagnostic indicators to determine if collinearity was indeed an issue. The first was the variance inflation factor (VIF). VIF is an indicator of inflation in the variance of the regression coefficients as the result of collinearity. In general, large VIF values indicate

possible collinearity (Pedhazur, 1997). The smallest possible VIF is one. VIFs greater than 10 are indicative of extreme collinearity problems.

Tolerance is another indicator of collinearity. For a particular variable, tolerance indicates the proportion of variance not accounted for by the other independent variables. Tolerance can be calculated as  $\frac{1}{VIF}$ . Thus, at the smallest possible VIF, tolerance is one. As VIF increases, tolerance decreases. Higher VIFs indicate collinearity issues, therefore, small values of tolerance indicate collinearity issues. For example at a VIF of 10 (a cutoff indicating collinearity issues), tolerance would be .1. Tolerance values below .1, therefore indicate extreme collinearity issues.

When detecting collinearity, I examined each of these indicators and used a combination of them to determine if I have a collinearity problem with the data for the current study. In other words, a small tolerance number alone would not have led me to conclude I have a collinearity problem. I would also have needed to see a large VIF, high bivariate correlations, large standard errors, and signs on regression coefficients in unexpected directions before I become convinced of a collinearity problem.

### **Summary**

In this chapter, I detailed the methodology used to examine the relationship between perceived teacher legitimacy and final course grades and transformative learning. Additionally, in this chapter I discussed the methodology used to develop a measure of perceived teacher legitimacy. I provided a description of the study's participants and gave details regarding the protocols and instruments used to gather data for the study. Finally, I discussed the statistical and psychometric procedures used to

analyze the data. In the next chapter I provide results of qualitative and empirical data analysis procedures used in the current study.

## **CHAPTER IV**

### **RESULTS**

In this chapter, the results of data collection and the findings of the statistical analysis are presented. In the first section, I address the first research question and provide the results of the focus group interviews. In the next section I outline results from the pilot study conducted on the teacher legitimacy scale (TLS) developed from the results of the focus groups. I provide details regarding item development, including Rasch and exploratory factor analysis. In the final section, I address Research Questions 2 and 3. I discuss reliability estimates and Rasch analysis for each of the measures, correlations between measures as an indicator of validity, confirmatory factor analysis for the TLS, and multiple regressions run using data gathered in the survey phase of the current study in an effort to answer the research questions.

#### **Participants**

The sampling frame for all phases of the current study was the 699-member student body of Squadron Officer School, class 13C. Age and end-of-class score data for class members and participants in each phase of the current study are given in Table 3. Additional demographic data for class members and participants in each phase of the current study are given in Table 2. These data present a snapshot of the sample I used for the current study. The sample was representative of adults who have completed college

(and even graduate school) and who are returning to the educational environment for some reason. In the case of the sampling frame for the current study, students have returned for continuing education. This was representative of many educational settings. Teachers, nurses, and doctors are often required to complete continuing education credits. Other professions require similar on-going training and/or recertification.

Table 3

*Participants' Ages and End-of-Course Scores*

|                           | Class             | Focus Groups     | Pilot Study <sup>a</sup> | Survey            |
|---------------------------|-------------------|------------------|--------------------------|-------------------|
|                           | ( <i>N</i> = 698) | ( <i>N</i> = 72) | ( <i>N</i> = 67)         | ( <i>N</i> = 424) |
| Age Range                 | 25 - 49           | 27 - 46          | 26 - 39                  | 25 - 48           |
| <i>M</i>                  | 30.47             | 30.67            | 30..25                   | 30.35             |
| <i>SD</i>                 | 3.85              | 4.21             | 3.50                     | 3.42              |
| End-of-Course Score Range | 37 - 97           | 47.24 - 92.99    |                          | 42.12 - 97        |
| <i>M</i>                  | 69.30             | 71.95            |                          | 68.69             |
| <i>SD</i>                 | 11.32             | 11.13            |                          | 10.72             |

*Note.* The “class” column represents the sampling frame.

<sup>a</sup>End-of-course scores could not be obtained for pilot study participants

### Research Question 1

Research Question 1 asks: what teacher characteristics give students the perception their teachers are legitimate? A follow up to Research Question 1 asks what behaviors define the teacher characteristics that give students the perceptions their teachers are legitimate. I interviewed focus groups using the critical incident technique to develop an answer to Research Question 1.

Participants in the focus groups consisted of 72 randomly-selected students from SOS class 13C. Chi-square tests of independence did not reveal significant differences

between focus group participants and the class as a whole on the demographic variables listed in Table 2. Similarly, independent samples *t*-tests did not show significant differences in age or end-of-course score between these two groups. After putting participants in a frame of reference regarding legitimate teachers, I asked them to identify the characteristics and behaviors these teachers exhibited that gave them the perception these teachers were legitimate.

Broken up into four equally-sized focus groups, participants provided numerous characteristics of legitimate teachers. Focus group participants also provided the behaviors indicative of each characteristic. Almost invariably, participants identified flexibility as a characteristic critical to teacher legitimacy. Participants indicated teachers who are able and willing to change teaching styles, the pace of a lesson, or even lesson content in order to facilitate student learning are highly likely to be perceived as legitimate. Additionally, participants across the board identified passion as a key piece of teacher legitimacy. Participants asserted teachers who are passionate about teaching and their subject increase student interest and motivation and are therefore seen as more legitimate teachers. After aggregating the multitude of characteristics and corresponding behaviors, a final list of 19 characteristics, as identified by the focus groups, emerged. This list is given in Table 4.

Table 4

*Teacher Legitimacy Characteristics from Focus Group Interviews*

| Characteristics | Behaviors   |
|-----------------|---|
| Approachable    | welcomes student inquiry, encourages open engagement, smiles  |
| Available       | offers his/her time outside of class for student questions, takes measures to ensure students know how to contact him/her outside of class, comes to class early or stays after class to answer questions |
| Challenging     | delivers material at a level just above current student knowledge, holds students to higher standard, expects more of students than they think they are capable of  |
| Communication   | speaks clearly, uses everyday language to explain difficult concepts, dynamic speaker   |
| Confident       | doesn't "fold" under pressure, answers questions without hesitation, conducts lessons without fumbling for guidance   |
| Credentialed    | has gained appropriate degree/certification, seeks continued professional development, stays "current"  |
| Dependable      | starts class on time, returns graded assignments/feedback when promised, consistent grading practices   |
| Experienced     | uses his/her own real-world experience as classroom examples, speaks from the point of view of one who has done the things about which he/she is talking, displays "field knowledge"                      |
| Expertise       | quickly and accurately answers questions without needing to consult outside materials, displays knowledge over and above the course text, expands lessons to cover all student knowledge levels as needed |
| Flexible        | recognizes "on-the-fly" learning opportunities and uses them where possible, adapts lessons/material to student performance when necessary, meets the needs of different learning styles                  |
| Honest          | admits mistakes, teaching output congruent with stated objectives, does what he/she says he/she will do   |

Table 4 (continued)

| Characteristics | Behaviors  |
|-----------------|--|
| Humble          | acknowledges his/her own limitations, accepts feedback from students regarding ways to improve course/lessons, explains methods/rationale for material if necessary                                      |
| Invested        | shows concern for student achievement, initiates discussions with students to gauge progress, expends necessary resources to ensure student learning, provides timely feedback                           |
| Motivated       | excited about role as a teacher, maintains enthusiasm throughout the course, talks about his/her own continued learning  |
| Passion         | high energy in lectures/discussions, charismatic teaching style, dynamic teaching methods  |
| Professional    | maintains neat/clean appearance, exhibits appropriate “on” and “off-duty” behavior, fosters appropriate educational relationships  |
| Relates         | shows he/she remembers what it was like to be a student, shows understanding of individual students’ circumstances, develops/maintains peer-like relationship with students while remaining professional |
| Respectful      | does not humiliate or embarrass students in class, is polite to students [says thank you and please, etc.], does not interrupt students while they are talking, does not talk down to students           |
| Unbiased        | does not push his/her opinions on students, allows students freedom to express their own opinions, allows students to question the status quo  |

### Pilot Study

I developed a measure of teacher legitimacy based on the list of legitimacy characteristics from the focus groups. Teachers, like other authority figures, are legitimate based on the perception of their students (Tyler, 2002). Perception of students regarding the legitimacy of their teachers, therefore, was most important to the definition

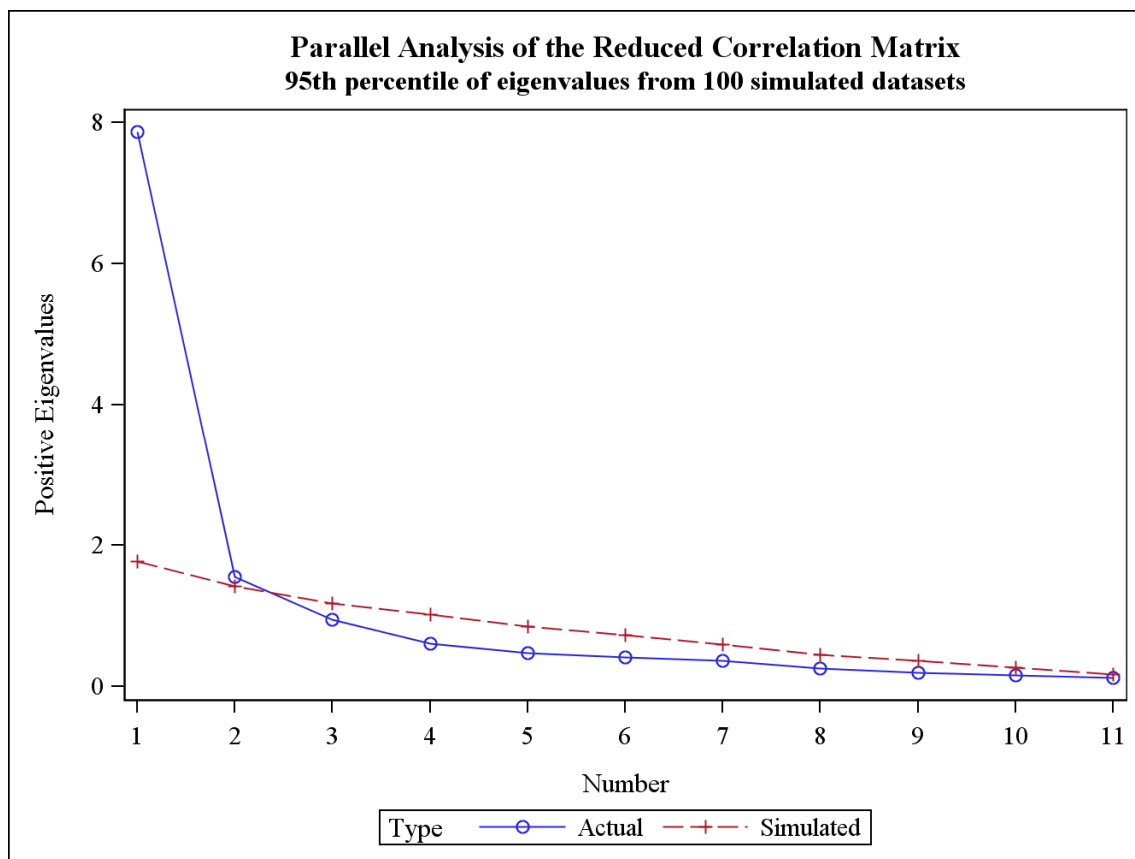
of legitimacy in the current study. Thus, I did not supplement the focus group characteristics with characteristics from either legitimacy or teacher effectiveness literature. To determine validity and reliability of scores from this new measure, I presented the draft of the measure to 67 students from SOS class 13C. All 67 surveys were returned. Independent samples *t*-tests did not show significant differences in ages between pilot study participants and class 13 C as a whole. Likewise, Chi-squared tests of independence did not show significant differences between these groups on the demographic variables listed in Table 2, with the exception of the ethnicity variable,  $\chi^2(6, N = 766) = 14.166, p = .028$ . Hispanics and Asians were underrepresented among pilot study participants.

### **Reliability**

Reliability estimation of the total scale scores from the pilot study revealed a Cronbach's  $\alpha$  of .92. Rasch item reliability was .92. (Recall that Cronbach's  $\alpha$  gives an estimate of internal consistency while Rasch item reliability gives information regarding the item difficulty range [a larger range being more desirable].) Further analysis of the Cronbach's  $\alpha$  with Deleted Variable table from the SAS CORR procedure showed the Cronbach's  $\alpha$  would decrease with all items removed except *dependable*. The reliability estimate would increase slightly (from .920 to .923) with *dependable* removed. Taken together, these reliability estimates indicate scores on the draft measure were reliable, but that I should possibly consider removing *dependable* from the measure.

## Validity

To begin the determination of validity, I conducted an exploratory factor analysis on the data from the pilot study measure. I analyzed the correlation matrix and performed a principle axis factors analysis with a Promax rotation. Initial parallel analysis (PA) suggested retaining two factors within the construct of Teacher Legitimacy. Figure 1. shows the PA for pilot study data. I initially ran the EFA with a forced two-factor solution. The factor structure resulting from that analysis is shown in Table 5. Although PA indicated two factors should be retained and the structure was fairly clear, I determined this solution was not unambiguously interpretable. For example, factor two is made up mostly of “personal” characteristics such as honest, dependable, and humble (as opposed to characteristics that can be gained such as expertise and credentialed). Factor one, however, also has some of these personal characteristics (e.g., confident, approachable). Due to this lack of clear interpretability I did not name the factors resulting from the two factor solution, and I reran the EFA limited to a one factor solution. The one factor solution is presented in Table 6. Interestingly, in the one factor solution, the item “Dependable” loaded at less than .30, the generally accepted cutoff for retention.



*Figure 1.* Parallel Analysis of Pilot Study Teacher Legitimacy Data

Table 5

*Exploratory Factor Analysis Rotated Factor Pattern—Two Factor Model*

|                    | Factor 1 | Factor 2 | $h^2$ |
|--------------------|----------|----------|-------|
| Confident          | .92      |          | .74   |
| Motivated          | .82      |          | .64   |
| Invested           | .81      |          | .62   |
| Expertise          | .80      |          | .60   |
| Experienced        | .76      |          | .48   |
| Passion            | .75      |          | .67   |
| Flexible           | .74      |          | .50   |
| Credentialed       | .58      |          | .47   |
| Relates            | .56      | .31      | .60   |
| Approachable       | .56      |          | .54   |
| Challenging        | .55      |          | .49   |
| Available          |          | .68      | .44   |
| Dependable         |          | .66      | .33   |
| Honest             |          | .62      | .47   |
| Professional       |          | .56      | .30   |
| Unbiased           |          | .51      | .38   |
| Respectful         |          | .49      | .24   |
| Communication      | .41      | .48      | .60   |
| Humble             |          | .42      | .32   |
| Variance Explained | 6.08     | 3.33     |       |
| % Variance         | 32.00    | 17.53    |       |
| Cumulative         | 32.00    | 49.53    |       |

*Note.* Factor loadings of less than .30 are not displayed. Variance explained is pre-rotation. Percentage variance is variance divided by 19 times 100.  $h^2$  = communality coefficient (the extent to which the item correlates to all other items).

Table 6

*Exploratory Factor Analysis Rotated Factor Pattern—One Factor Model*

|                    | Legitimacy | $h^2$ |
|--------------------|------------|-------|
| Passion            | .81        | .65   |
| Confident          | .79        | .62   |
| Relates            | .77        | .60   |
| Motivated          | .76        | .57   |
| Communication      | .75        | .56   |
| Invested           | .74        | .55   |
| Approachable       | .73        | .54   |
| Expertise          | .73        | .53   |
| Challenging        | .70        | .49   |
| Credentialed       | .69        | .47   |
| Flexible           | .66        | .44   |
| Experienced        | .61        | .38   |
| Honest             | .57        | .32   |
| Unbiased           | .54        | .29   |
| Humble             | .52        | .27   |
| Available          | .48        | .23   |
| Professional       | .39        | .15   |
| Respectful         | .35        | .13   |
| Dependable         |            | .07   |
| Variance Explained | 7.86       |       |
| % Variance         | 41.37      |       |

*Note.* Factor loadings of less than .30 are not displayed. Variance explained is pre-rotation. Percentage variance is variance divided by 19 times 100.  $h^2$  = communality coefficient (the extent to which the item correlates to all other items).

Rasch analysis of pilot study data indicated a person measure of 2.08 with an item measure of 0.00. This difference indicated mistargeting, i.e., the items were not measuring all participants fully. This was supported by the item-person map which showed items spread across approximately 2.5 logits with the item mean near the second standard deviation below the person mean. This indicated the measure did not contain items that test persons of higher ability. In a Rasch model sense, the term ability refers to answering questions or marking items on the scale in questions. Those with high ability were able to answer more difficult questions correctly or were able to choose the most difficult options. So the item map indicated everyone was able to choose the most difficult items and that the scale could be improved by the addition of several more difficult items. Although there was clearly mistargeting, the arrangement of items on the map made theoretical sense, with *passion* as the most difficult item and *professional* as the least difficult. It is not beyond comprehension that a teacher has to establish professionalism, as defined in the current study, first and foremost and without that basis may not be able to otherwise establish legitimacy. Likewise, it seems likely that passion for teaching and/or subject matter may be the pinnacle of teacher legitimacy characteristics; something for which all teachers should strive, but perhaps only the most legitimate obtain.

With regard to item fit, Rasch analysis indicated all items fit reasonably well with the exception of *dependable*. All items met INFIT criteria. *Dependable*, however, showed an OUTFIT MNSQ of 1.72 with a ZSTD of 2.5. Although these OUTFIT data were only slightly above the criteria of 1.5 and 2.0, respectively, the PT-MEASURE correlation, the indicator of the correlation of *dependable* with all other items on the

measure, was the lowest of all items (.32). Additionally, the PT-MEASURE correlation for *dependable* demonstrated the greatest difference from its expected correlation (.54). The indications of misfit of the item *dependable* from Rasch analysis suggested this item required further scrutiny.

Rasch analysis also suggested survey respondents were not using all five Likert-type response categories. Response category 1 was not used on 13 of 19 items and was used only an average of 2.5% of the time on the other six items. Response category 2 was not used on 3 of 19 items and was used only an average of 4.9% of the time on the other 16 items. This lack of use of response categories 1 and 2 indicated the traits presented in the TLS were relatively easy for respondents because few chose the more simple response categories 1 and 2. As a result, I combined response categories 1, 2, and 3 on the final survey. Thus, the final measure was based on three rating scale options (see Appendix F for the final survey).

Given the combined information from the SAS CORR procedure, the EFA and Rasch analysis all indicating the item “Dependable” was likely measuring something different than the other 18 items, I decided to drop “Dependable” from my measure. After incorporating other suggested edits from pilot study participants, I developed the final 18-item Teacher Legitimacy Survey (see Appendix F for the final survey).

### **Research Questions 2 and 3**

Research Question 2 asks “what is the relationship between perceived teacher legitimacy and student outcomes as measured by end-of-class scores, after controlling for squadron of assignment, gender, students’ previous education, and instructor experience?”. Research Question 3 is similar but seeks to determine the relationship

between perceived teacher legitimacy and student outcomes as quantified by a measure of transformative experience after controlling for the same variables.

I presented the final 18-item survey, along with the perceived teacher caring scale Muller's legitimacy measure, and the Transformative Experience Measure to 464 members of SOS class 13C, none of whom had participated in the study to this point. Chi-squared tests of independence did not show significant differences between the final survey participants and class 13C as a whole on the demographic variables listed in Table 2, with the exception of the ethnicity variable,  $\chi^2, (6, N = 1,126) = 14.166, p = .003$  and the education level variable,  $\chi^2, (2, N = 665) = 7.77, p = .021$ . African Americans, Hispanics, and Bachelor's degree holders were underrepresented among final survey participants. Also, independent samples *t*-tests showed no significant differences in age or end-of-course score between these two groups. Participants returned 427 surveys, giving me an initial response rate of 92.03%

### **Reliability**

To examine reliability I calculated a Cronbach's  $\alpha$  reliability estimate on scores from the TLS. Cronbach's  $\alpha$  for scores on the 18-item TLS was .93. The reliability analysis did not suggest the reliability of scores on the TLS could be improved by removing any items.

### **Validity**

To start statistical analysis in pursuit of answers to Research Questions 2 and 3, I conducted Rasch analysis to begin to establish validity of inferences from scores on the TLS. Although this analysis still indicated the mistargeting from the pilot study, there were no misfitting items and the three response categories were used satisfactorily.

Further, the item ordering made theoretical sense with *passion* as the most difficult item and *professional* as the least difficult. Item reliability from the Rasch analysis was .98. Overall, Rasch analysis suggested the TLS was a good measure that provided a meaning “ruler” along which teacher could be ordered from least to most legitimate.

To further investigate the question of validity, I correlated results on the TLS with scores on two other measures. First I correlated the TLS with the Teacher Caring Scale (TCS). Because Rasch analysis of the TCS indicated some misfitting items for the current study, I omitted items three, eight, and nine from the TCS for statistical analysis. A reliability estimate of the scores on the 6-item TCS yielded a Cronbach’s  $\alpha$  of .91. The shared variance between the two measures was 51%, which was higher than my pre-selected cut off of 36%, and thus, did not indicate discriminant validity. Rather, it indicated some possible similarities between the constructs of teacher caring and teacher legitimacy.

To test concurrent validity, I correlated scores on the TLS with scores on a modified version of Muller’s measure of political legitimacy. The shared variance between the two measures was 60%. This was within my preselected range of 49% to 64%. Thus, taken by itself, this may have been indicative of concurrent validity.

However, the TCS and Muller comparisons together indicated something else altogether. With similar shared variances between these two measures and the TLS, it is safe to say that the TLS contained some elements of both. That is, the TLS is measuring some caring aspects and some legitimacy aspects. For the purposes of this and further study, it is suggested, then, that teacher legitimacy includes some aspects of teacher

caring. Inter-correlations between all measures used in the current study can be found in Table 7.

Table 7

*Inter-correlations of the Measures Used in the Current Study*

|        | TCS   | Muller | TE    | EOC   |
|--------|-------|--------|-------|-------|
| Muller | .719* |        |       |       |
| TE     | .182* | .246*  |       |       |
| EOC    | -.003 | .030   | -.023 |       |
| TLS    | .714* | .777*  | .184* | -.041 |

*Note.* TCS = Perceived Teacher Caring Scale, Muller = Muller's Political Legitimacy Scale, TE = Transformative Experience Measure, EOC = End-of-Course Scores, TLS = Teacher Legitimacy Scale

\* $p < .01$

### Confirmatory Factor Analysis

To further solidify the construct validity established by Rasch analysis, I conducted a confirmatory factor analysis on the TLS data from the final survey. The result of the CFA for this one -factor measurement model was,  $\chi^2$  (135 *df*,  $N = 419$ ) = 478.10,  $p < .001$ , RMSEA = .078, TLI = .99, CFI = .99. The significant  $\chi^2$  indicates the proposed one-factor model does not fit the actual data well. However, because  $\chi^2$  is sensitive to sample size, I relied on general rules of thumb and other fit indices as well. The ratio of  $\chi^2$  to degrees of freedom was greater than three, suggesting the model does not fit the data. However; RMSEA, TLI, and CFI each suggest adequate fit. Thus, I determined my data fit the one-factor model reasonably well. Results of the CFA for the teacher legitimacy model are shown in Table 8.

Table 8

*Confirmatory Factor Analysis for the Teacher Legitimacy Model*

| Item          | $\lambda$ | $r^2$    |
|---------------|-----------|----------|
| Approachable  | .78*      | .61      |
| Available     | .67*      | .45      |
| Challenging   | .77*      | .60      |
| Communication | .87*      | .73      |
| Confident     | .81*      | .66      |
| Credentialed  | .83*      | .68      |
| Experienced   | .78*      | .61      |
| Expertise     | .85*      | .72      |
| Flexible      | .80*      | .65      |
| Honest        | .82*      | .68      |
| Humble        | .66*      | .43      |
| Invested      | .82*      | .67      |
| Motivated     | .60*      | .36      |
| Passion       | .76*      | .58      |
| Professional  | .72*      | .52      |
| Relates       | .84*      | .70      |
| Respectful    | .62*      | .39      |
| Unbiased      | .72*      | .52      |
|               |           |          |
| Model Fit     | $df$      | $\chi^2$ |
|               | 135       | 478.10*  |
|               |           | RMSEA    |
|               |           | .078     |
|               |           | TLI      |
|               |           | .99      |
|               |           | CFI      |
|               |           | .99      |

*Note.*  $\lambda$  = Completely Standardized Factor Loading; RMSEA = Root Mean Square Error of Approximation; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index

\* $p < .01$

Completely standardized loadings ranged from .87 (*communication*) to .60

(*motivated*) and were all significant at the .01 level. CFA information presented above

indicates the one-factor teacher legitimacy measurement model adequate to measure teacher legitimacy.

### Assumptions

Before interpreting results from hierarchical regression run on the data from the final survey, I checked assumptions that the data analyzed adhered to the rationale on which regression analysis is founded. First, I checked to ensure measurement used to provide data for the regression analysis was error-free. Reliability estimates of the scores from all measures were above .90. Thus, I concluded data from my final survey met this assumption. Reliability estimates from measures in the current study can be found in Table 9.

Table 9

#### *Reliability Estimates*

| Measure                 | Previously Established<br>Cronbach's $\alpha$ | Cronbach's $\alpha$ from the<br>Present Study |
|-------------------------|---|---|
| TCS <sup>a</sup>        | .95   | .91   |
| TEM <sup>b</sup>        | .99 <sup>c</sup>                              | .95   |
| TLS <sup>d</sup>        | .92   | .93   |
| EOC Scores <sup>e</sup> |   | .90   |

*Note.* TCS = Teacher Caring Scale. TEM = Transformative Experience Measure. TLS = Teacher Legitimacy Scale. EOC = end-of-course

<sup>a</sup>The TCS used for the current study has items 3, 8, and 9 removed due to Rasch misfit.

<sup>b</sup>The TEM used for the current study has items 1, 2, 3, 11, 14, and 27 removed due to Rasch misfit. <sup>c</sup>Past reliability estimate for the TEM is a Rasch Item reliability. <sup>d</sup>The past TLS was the version used in the pilot of the current study. <sup>e</sup>No previously established reliability estimates were available for end-of-course scores

Next I checked to ensure the models used in my regression analysis were properly specified. Examination of the residual plots for the regressions shows the data to be

linear and does not indicate any relevant variables have been omitted. I, therefore, concluded my regression models were properly specified.

Finally, I checked assumptions regarding residuals. Further examination of the residual plots showed the residuals to be random. Inspection of the P-P plots and histograms indicates the residuals were normally distributed. Additionally, another check of the residuals plots and histograms revealed the residuals to be homoscedastic. Thus, I concluded my data met assumptions regarding residuals.

### **Outliers**

Casewise diagnostics on the regression run with end-of-course scores as the dependent variable revealed no outliers. Casewise diagnostics on the regression run with scores on the transformative experience measure revealed five cases to have standardized residuals outside of three standard deviations from the predicted values. Examination of leverage, Cook's D, and DFBETA data for these cases showed three cases, cases 4, 44, and 304, to possibly be exerting influence on the results the regression. I reran the regression analysis after deleting these cases and neither of the new regressions (without the potentially influential cases) produced a different result except that the final model with all three cases removed was only significant at the .05 level whereas the full model with all cases included (as well as the model with case 4 and the model with cases 4 and 304 removed) was significant at the .01 level. Thus, I determined there were no influential cases and interpreted the full model with all cases included. A summary of the outlier statistics for the five identified cases can be found in Table 10. Detailed summaries of the regressions run without influential cases can be found in Appendix J.

Table 10

*Outlier Statistics*

| Case Number | Std Residual | Cook's D <sup>a</sup> | DFBETA <sup>b</sup> |
|-------------|--------------|-----------------------|---------------------|
| 4           | 4.164        | .06328                | -.14480             |
| 44          | 3.917        | .03432                | -.12382             |
| 129         | -4.030       | .04967                | -.06371             |
| 239         | -3.008       | .01531                | -.02312             |
| 304         | -3.553       | .06843                | -.33672             |

*Note.* No cases were above rule of thumb leverage cut off of  $h > .2$

<sup>a</sup>Average Cook's D for all cases in this analysis was .00276. <sup>b</sup>DFBETA cutoff,  $\frac{2}{\sqrt{n}}$ , for this analysis was .0985

### **Collinearity**

Bivariate correlations between sets of independent variables were not high. An examination of collinearity statistics showed VIF values below 1.55 and tolerance numbers above .64.  $\chi^2$  analysis of the categorical variables did not indicate collinearity. Finally, ANOVAs run between the continuous variable "Flight Commander Experience" and the categorical variables did not indicate collinearity. Overall, collinearity indicators for these regressions show that collinearity was not an issue in interpreting the results of the analysis.

### **Regressions**

To answer Research Question 2 and test my first hypothesis, I initially ran a hierarchical regression in four steps. The first two steps contained the control variables of flight commander experience, gender, educational level (step one), and squadron of assignment (step two). As gender, educational level, and squadron of assignment were categorical variables, I generated effect-coded variables for each. Additionally at step

one, I generated product variables between gender and educational level and tested for interactions. At step three, I entered my variable of interest for Research Question 2: scores on the TLS. Finally, at step four I entered a product variable generated between gender and scores on the TLS to examine any possible interaction. My dependent variable was end-of-course scores. None of the interactions tested were significant, so I dropped the product variables from the regression and reran it. This resulted in a three-step regression with control variables in the first two steps and my independent variable of interest in step three.

Results of this first regression refute my first hypothesis. Scores on the TLS did not significantly explain student outcomes as measured by end-of-class scores after controlling for squadron of assignment, gender, students' previous education, and instructor experience,  $\Delta R^2 = .005$ ,  $F(1, 402) = 2.050$ ,  $p = .155$ . It was interesting to note that the only variable included in this regression that was significant in explaining end-of-course scores was flight commander experience. A detailed summary of the results of this regression can be found in Table 11.

To answer Research Question 3 and test my second hypothesis, I ran a hierarchical regression similar to that run to answer Research Question 2. Because Research Question 3 asks about the relationship between the TLS and the transformative experience measure, scores on the TEM served as my dependent variable for these regressions. I tested the same interactions as in the first set of regressions and again, none were significant so I dropped them and reran the regression.

Table 11

*Hierarchical Multiple Regression Analysis: Scores on the Teacher Legitimacy Scale Explaining End-of-Course Scores*

| Variable   | B      | SE B  | $\beta$ | $\Delta R^2$ | $\Delta F$ | <i>df</i> |
|------------|--------|-------|---------|--------------|------------|-----------|
| Step 1     |        |       |         | .021         | 2.156      | 4, 408    |
| Flt/CC Exp | .100   | .046  | .108*   |              |            |           |
| Male       | 1.220  | .675  | .090    |              |            |           |
| Bach       | .367   | 1.068 | .019    |              |            |           |
| Mast       | .398   | 1.065 | .021    |              |            |           |
| Step 2     |        |       |         | .009         | .734       | 5, 403    |
| Flt/CC Exp | .098   | .048  | .106*   |              |            |           |
| Male       | 1.217  | .677  | .089    |              |            |           |
| Bach       | .326   | 1.075 | .017    |              |            |           |
| Mast       | .433   | 1.070 | .023    |              |            |           |
| Black      | .139   | 1.233 | .007    |              |            |           |
| Bull       | -1.489 | 1.211 | -.075   |              |            |           |
| Cent       | -1.015 | 1.043 | -.057   |              |            |           |
| Drag       | -.071  | 1.200 | -.004   |              |            |           |
| Knight     | .891   | 1.271 | .044    |              |            |           |

Table 11 (continued)

| Variable   | B      | SE B  | $\beta$ | $\Delta R^2$ | $\Delta F$ | $df$   |
|------------|--------|-------|---------|--------------|------------|--------|
| Step 3     |        |       |         | .005         | 2.032      | 1, 402 |
| Flt/CC Exp | .110   | .048  | .118*   |              |            |        |
| Male       | 1.251  | .676  | .092    |              |            |        |
| Bach       | .246   | 1.075 | .013    |              |            |        |
| Mast       | .271   | 1.075 | .014    |              |            |        |
| Black      | -.005  | 1.236 | .000    |              |            |        |
| Bull       | -1.341 | 1.214 | -.068   |              |            |        |
| Cent       | -1.278 | 1.058 | -.071   |              |            |        |
| Drag       | .054   | 1.202 | .003    |              |            |        |
| Knight     | .791   | 1.271 | .039    |              |            |        |
| TLS Score  | -.100  | .070  | -.073   |              |            |        |

*Note.*  $N = 412$ .  $R^2$  for final model = .034,  $F(10, 402) = 1.433$ ,  $p = .163$ . TLS = Teacher Legitimacy Scale; TEM = Transformative Experience Measure; Flt/CC Exp = Flight Commander Experience; Bach = Bachelor's Degree; Mast = Master's Degree; Black = Blackhawks; Bull = Bulls; Cent = Centurions; Drag = Dragons; Knight = Knights

\* $p < .05$ .

Results of this second regression support my second hypothesis. Scores on the TLS did explain student outcomes quantified by a measure of transformative experience, after controlling for squadron of assignment, gender, students' previous education, and instructor experience,  $\Delta R^2 = .03$ ,  $F(1, 401) = 12.671$ ,  $p < .001$ . It was interesting to note that educational level also significantly explained scores on the TEM. A detailed summary of the results of this regression can be found in Table 12.

### **Summary**

In this chapter, I presented the results of data collection and the findings of the statistical analysis. I provided details regarding the demographic composition of the sampling frame for the current study, Squadron Officer School Class 13C, addressed the first research question and provided the results of focus group interviews. Next I outlined results from the pilot study conducted on the teacher legitimacy scale (TLS) to include item development. Finally, I addressed Research Questions 2 and 3 by discussing reliability estimates and Rasch analysis for each of the measures, correlations between measures as an indicator of validity, confirmatory factor analysis for the TLS, and multiple regressions run using data gathered in the survey phase of the current study in an effort to answer the research questions.

In the next Chapter, I discuss the results and delve into implications of the results. I also examine limitations of the current study and make a few suggestions regarding future research in the area of teacher legitimacy.

Table 12

*Hierarchical Multiple Regression Analysis: Scores on the Teacher Legitimacy Scale Explaining Scores on the TEM*

| Variable   | B     | SE B | $\beta$ | $\Delta R^2$ | $\Delta F$ | <i>df</i> |
|------------|-------|------|---------|--------------|------------|-----------|
| Step 1     |       |      |         | .026*        | 2.683      | 4, 407    |
| Flt/CC Exp | .006  | .008 | .036    |              |            |           |
| Male       | .062  | .120 | .026    |              |            |           |
| Bach       | -.434 | .190 | -.129*  |              |            |           |
| Mast       | -.578 | .190 | -.172** |              |            |           |
| Step 2     |       |      |         | .01          | .846       | 5, 402    |
| Flt/CC Exp | .010  | .008 | .059    |              |            |           |
| Male       | .068  | .120 | .028    |              |            |           |
| Bach       | -.441 | .191 | -.131*  |              |            |           |
| Mast       | -.583 | .190 | -.173** |              |            |           |
| Black      | .347  | .219 | .099    |              |            |           |
| Bull       | .010  | .215 | .003    |              |            |           |
| Cent       | -.020 | .186 | -.006   |              |            |           |
| Drag       | -.274 | .213 | -.078   |              |            |           |
| Knight     | -.186 | .226 | -.051   |              |            |           |

Table 12 (continued)

| Variable   | B     | SE B | $\beta$ | $\Delta R^2$ | $\Delta F$ | $df$   |
|------------|-------|------|---------|--------------|------------|--------|
| Step 3     |       |      |         | .03**        | 12.671     | 1, 401 |
| Flt/CC Exp | .005  | .008 | .030    |              |            |        |
| Male       | .053  | .119 | .022    |              |            |        |
| Bach       | -.406 | .189 | -.120*  |              |            |        |
| Mast       | -.513 | .189 | -.153** |              |            |        |
| Black      | .411  | .217 | .117    |              |            |        |
| Bull       | -.055 | .213 | -.015   |              |            |        |
| Cent       | .095  | .186 | .030    |              |            |        |
| Drag       | -.329 | .211 | -.094   |              |            |        |
| Knight     | -.141 | .223 | -.039   |              |            |        |
| TLS Score  | .044  | .012 | .181**  |              |            |        |

*Note.*  $N = 412$ .  $R^2$  for final model = .065,  $F(10, 401) = 2.805$ ,  $p = .002$ . TLS = Teacher Legitimacy Scale; TEM = Transformative Experience Measure; Flt/CC Exp = Flight Commander Experience; Bach = Bachelor's Degree; Mast = Master's Degree; Black = Blackhawks; Bull = Bulls; Cent = Centurions; Drag = Dragons; Knight = Knights

\* $p < .05$ . \*\* $p < .01$

## **CHAPTER V**

### **DISCUSSION**

Authority relationships are critical to successful interactions between teachers and students (i.e., learning). Legitimacy is a cornerstone of authority. It is, therefore, important to understand legitimacy and its relationship to learning and other important student outcomes. This final chapter provides a summary and discussion of research findings regarding the relationship between legitimacy and student outcomes. Implications of the research findings as well as limitations of the study are discussed. The chapter concludes with recommendations for future studies.

#### **Summary and Discussion of Research Findings**

The purpose of this study was to determine what characteristics or behaviors give students the perception their teachers are legitimate. Additionally, the study examined the relationship between perceived teacher legitimacy and student outcomes as determined by end-of-class scores and a measure of transformative experience. I conducted focus group interviews to gather student perceptions regarding teacher legitimacy characteristics, and then developed an instrument to measure student perceptions about their teachers' legitimacy. I conducted Rasch analysis and exploratory factor analysis on data gathered from a pilot study on an initial draft of the new instrument to establish reliability and validity. After verifying structure of the final instrument with further Rasch analysis and confirmatory factor analysis, I conducted

hierarchical multiple regressions to determine if students' perceptions of teacher legitimacy as measured by the developed instrument explain significant variance in student outcomes.

Results of data analysis showed support for my hypothesis that perceived teacher legitimacy would explain student outcomes as quantified by a measure of transformative experience after controlling for squadron of assignment, gender, students' previous education, and instructor experience. Findings for my research questions as obtained from data analysis are summarized as follows:

### **Research Questions 1 and 1a**

Focus group participants had experience with instructors at all levels and easily described their ideal instructor in terms of legitimacy. These descriptions yielded an initial group of 24 characteristics and corresponding behaviors that gave students the perception that their instructor was legitimate. After further examination, some characteristics were repetitive and were grouped together. The final list contained 19 characteristics (see Table 3 for a list of these characteristics and Appendix E for a copy of the survey developed from this list).

### **Teacher Legitimacy Characteristics**

Throughout the focus groups, I saw very little hesitation in answering when I asked participants to describe their ideal teachers in terms of legitimacy. There were no silent members in either of the groups; everyone had something to say. In fact, I had to limit the interviews to ensure participants could get back to their regularly scheduled classes. In two of the four groups, several participants remained after the interviews were over to further assert their positions on legitimate characteristics. Although the list of

characteristics in Table 3 gives an overall representation of participants' perceptions, it does not convey the emphasis nearly all participants placed on *passion* and *flexibility*. Participants were adamant that *passion*, displayed by a high-energy, charismatic teaching style, was the most important characteristic with regards to legitimacy. They stated over and over again that high-energy teachers could overcome nearly any other shortfalls they might bring to the classroom. The almost automatic student engagement resulting from such dynamic classroom techniques were consistently stated as critical to classroom learning.

Following a close second was the characteristic of *flexibility*. Focus group participants had seen numerous examples of teachers who were willing and able to change, to adapt, to work with students' levels of understanding and either decrease or increase the pace of the lesson to ensure students' needs were being met. Unfortunately, there was no dearth of examples in the opposite direction. Numerous participants told of teachers who either failed to recognize students did not comprehend the material, or who were unable or unwilling to adapt the material on the fly to adapt to those who needed something different. Specific mention was made of those teachers who stopped a particularly valuable discussion in order to push the lesson along. Focus group participants emphatically asserted this *flexibility* as key to teachers' legitimacy. Participants did not emphasize flexibility at the individual student level (e.g., granting extensions for late assignments), but did discuss teachers remembering what it was like to be as student in the *relates* characteristic.

Overall, focus group participants provided a useful array of characteristics. These key descriptors of the legitimate teacher mirror some other lists of effective teaching

characteristic. For example, many of the traits common across the studies of Feldman (1976), Lowman (1996), and Berg and Lindseth (2004) (i.e., knowledgeable, enthusiasm, concern with class progress, respect for students, and availability) were also common to the teacher legitimacy characteristics described by the focus group participants in the current study. Additionally, five of the behaviors from the Teacher Behaviors Checklist (TBC; *accessible, approachable, effective communicator, professional, and respectful*; Buskist et al., 2002; Keeley, Smith, & Buskist, 2006) had nearly exact parallels on the Teacher Legitimacy Scale developed from the characteristics given by focus group participants (*available, approachable, communication skills, professional, and respectful*). Two of these (*accessible/available* and *respectful*) overlapped with the effectiveness characteristics from Table 1. Ten of the remaining TBC behaviors had similar characteristics on the TLS, but the characteristics described by focus group participants differed either in depth of characteristic or in the defining behaviors. For example, the characteristic *flexible* was on both scales, but the TBC combined *flexible* with *open-minded* and listed behaviors such as “accepts criticism from others” and “allows students to do make-up work when appropriate” (Buskist et al., 2002; Keeley et al., 2006). The TLS characteristic focused mainly on the flexible aspect of changing the lesson plans and utilizing “on the fly” opportunities. Additionally, while the TBC mentioned teachers having *realistic expectations* and defined that characteristic with the behaviors “covers material to be tested during class” and “does not overload students with reading” (Buskist et al., 2002; Keeley et al., 2006), the TLS covered a similar area of teaching behavior with the characteristic *challenging* with behaviors of “expects more from students than they think they are capable of” and “holds students to a higher

standard.” These concepts were similar, yet the focus group participants had a different idea of what expectations teachers should have of their students. Whereas the undergraduates on whom the TBC was normed seemed to require teachers who give them just what they need (or perhaps a little less), participants in the current study obviously wanted more of a challenge. This was perhaps due to the higher level of education focus group participants had when compared the college undergraduates used in the development of the TBC (Buskist et al., 2002; Keeley et al., 2006). The older, more educated focus group participants may have been slightly more discerning or have had higher expectations than the undergraduates.

Finally, there were items on both scales that did not have either parallel or similar items on the other scale. For example, the TLS characteristic *credentialed*, defined as “having the appropriate degree/certification” and “seeking continued professional development,” had no similar item on the TBC. Likewise, the TBC characteristic *rapport*, defined as “making class laugh through jokes and funny stories” and “knowing student names,” (Buskist et al., 2002; Keeley et al., 2006) had no parallel item on the TLS.

Overall, the comparison and contrast of the list of characteristics developed by focus groups in the current study with other lists of desired teacher behaviors supported my assertion that teacher legitimacy characteristics are a subset, a necessary but not sufficient part, of effective teaching characteristics. I discuss the possibility that these characteristics of teacher legitimacy may be particular to the sample from the current study in the limitations section of the chapter.

## Pilot Study

The misfit indications for the item *dependable* taken from Rasch analysis of pilot study data suggested this item was likely measuring something different than the other items on the teacher legitimacy scale. Although, the OUTFIT statistics for *dependable* were not extreme, they did require further examination. The point-measure correlation statistic in Rasch is a measure of the correlation of the particular item with all other items on the scale. The point-measure correlation for *dependable* was lower than any other item on the scale. Additionally, Rasch analysis gives an expected point-measure correlation for each item. The difference between this expected correlation and the obtained correlation is indicative of further misfit. Although there are no given criteria for an “acceptable” degree of difference between expected and obtained correlations, relative differences are good indicators of items with misfit. The difference between expected and obtained point-measure correlations for *dependable* was twice as large as the next largest difference for other items on the scale.

With misfit statistics pointing towards deletion of this item from the scale, I turned to exploratory factor analysis of the pilot study data to suggest further refinement. EFA results indicated a single, uni-dimensional scale was appropriate. In this one-factor solution, the item *dependable* was the only item that was not salient. It loaded under the single factor at less than .30 and therefore could be considered to belong with some other, as yet unidentified, factor. This suggests the item *dependable* was likely not a valid part of the teacher legitimacy scale and could be dropped from future versions.

The final evidence that *dependable* was not a valid part of the teacher legitimacy scale came from an examination of reliability data. A reliability estimate for the scores

on the TLS showed a high Cronbach's  $\alpha$ . To aid in pinpointing reliability problems, common software packages also provide a table that shows what the reliability estimate for scores on the scale of interest would be with individual items removed. For the pilot study data, reliability estimates decreased for each item removed, with the exception of *dependable*. Removal of *dependable* caused an increase in the reliability estimate. These three indicators, taken together, strongly suggested the item *dependable* was measuring something different than the other items on the TLS.

Further examination of the characteristic *dependable* and its corresponding behaviors shows the behaviors to be more related to classroom mechanics (i.e., starts class on time, returns graded assignments/feedback when promised, consistent grading practices) than to the personality-related behaviors of other characteristics (i.e., acknowledges his/her own limitations from *humble* and excited about role as a teacher from *motivated*). This may explain why *dependable* was not a "good fit." I removed *dependable* and presented the TLS without it as the final version of the measure of student perceptions of teacher legitimacy.

### **Research Questions 2 and 3**

I used the 19 characteristics and their corresponding behaviors to develop a measure of teacher legitimacy. I administered this 19-item measure in a pilot study. Classical psychometric analysis, Rasch analysis, and exploratory factor analysis of pilot study data and feedback from pilot study participants yielded an 18-item measure utilizing a 3-option Likert-type response scale (see Appendix F for the final survey).

Examination of reliability and validity of the results obtained from administration of the final survey showed its scores to be reliable and valid. A check of assumptions

regarding the efficacy of the data for use in regression analysis revealed no assumption violations that would cause doubts regarding interpretation of regression results.

Hierarchical multiple regressions run on the data gathered from the final survey did not show student perceived legitimacy significantly explained end-of-course scores after controlling for flight commander experience, gender, previous education, and squadron of assignment. They did show, however, that student perceived legitimacy significantly explained scores on a transformative experience measure after controlling for these same variables.

### **Final Survey**

The primary purpose of the current study was to determine what relationship existed between perceived teacher legitimacy and student outcomes. I hypothesized that teacher legitimacy, as measured by a survey of students' perceptions regarding teacher behaviors, would explain a significant amount of variance in student outcomes. One outcome measured was student performance at Squadron Officer School. The other outcome was student perceptions of their transformative experience while attending SOS. After confirming reliability and validity of all measures used in the current study, I subjected the data gathered to hierarchical multiple regression in order to control for several extraneous variables.

Reliability estimates for all measures were high ( $> .90$ ). There was no evidence to suggest that the reliability of any measures would affect interpretation of the regression results (see Table 9 for reliability estimates). Additionally, Rasch and confirmatory factor analysis suggest high construct validity of the teacher legitimacy scale (TLS) for this sample (see Table 6 for a summary of the CFA).

Shared variance of the scores from the TLS with scores on Muller's measure of legitimacy (Muller, 1970), which is a single item measure that asks respondents how well their instructor (as modified for this study) is fulfilling his or her main purpose, was high enough (56%) to indicate the TLS was measuring a construct similar to that being measured by Muller, but not so high as to suggest it was measuring exactly the same thing.

I had hypothesized scores on the TLS would have a low shared variance with scores on the teacher caring scale (TCS; Teven & McCroskey, 1997). As noted above, in a previous study (Drake, 2012), results of an exploratory factor analysis had indicated that characteristics making up a *compassion* factor were somewhat different from the characteristics that made up a *legitimacy* factor. Thus, in the current study, I used a measure of teacher caring as an assessment of discriminant validity. The shared variance between scores on the TLS and scores on the TCS was 49%. Although not as high as the correlation with Muller's measure, this correlation was suggestive of similarities between the two scales. Thus, this correlation does not support discriminant validity. There are several possible explanations for this.

One possible explanation for the higher-than-expected correlation (and shared variance) between these two measures is the inclusion of compassion-type items in the current study's definition of legitimacy. A previous study's definition of legitimacy (Drake, 2012; the definition on which the choice of a discriminant validity measure was based) did not include the characteristics *concerned, available, or approachable*. These characteristics were brought in to the definition of teacher legitimacy used in the current study by focus group participants. These characteristics were also part of the teacher

caring scale (Teven & McCroskey, 1997). Thus, with similar items, the measures were more highly correlated (and had higher shared variance) than expected.

Finally, responses to both measures could be similar because of response and/or method bias. Participants responded to both measures in the same session. It was possible it was difficult for participants to separate the concepts of caring and legitimacy (or any other measure of teacher effectiveness, for that matter) during this single sitting. When asked whether their teacher was effective, it was likely participants' answers would have been the same regardless of the different constructs represented by the questions. This possibility illustrates the difficulty in defining and measuring different constructs of teacher effectiveness. This does not, however, negate researchers' responsibility to do so. Researchers should attempt to collect data on the different constructs on different occasions rather than on one survey at one time in an attempt to minimize the potential for response bias.

Hierarchical multiple regressions run on data from the final survey of the current study supported one of my two hypotheses. According to these regressions, student perceptions of teacher legitimacy do not explain a significant amount of variance in end-of-course scores. This lack of significance, and the resulting failure of support for my hypothesis, has several possible explanations.

First, the sampling frame from which the sample for the current study was drawn was made up of successful military officers. Nearly 53% of participants in this final survey had Master's or Doctoral degrees. This was a group of high-achievers. As such, it is possible there were other factors such as degree of self-motivation and self-efficacy

that may have influenced end-of-course scores. The instructors, good or bad, legitimate or not, may have had less to do with end-of-course scores than the students themselves.

Another possible explanation for non-significance may be the method used in calculating the end-of-course scores. Squadron Officer School no longer uses tests as part of the end-of-course score. End-of-course scores are an amalgam of subjective scores that may lessen the impact of instructor legitimacy. SOS uses scores on briefings and papers, the grading of which are more subjective than that of multiple choice tests, as well as scores on instructor and peer evaluations, which are highly subjective, to determine the final score for a student. This subjectivity calls into question the validity of these end-of-course scores. For example, if the peer evaluation were designed to assess leadership, but the evaluator has had some sort of altercation with the evaluatee recently, the evaluation score may reflect that and be lower than it should. Essentially, that particular evaluation was measuring the effects of the altercation as opposed to the evaluatee's leadership ability. This possible lack of validity may have had an impact on the influence of any teacher effectiveness criterion, to include legitimacy.

In short, end-of-course grades may not be the best indicator of student outcomes at Squadron Officer School, especially when examining the impact of instructor effectiveness, specifically instructor legitimacy. A better indicator may be students' perception about whether their experience at SOS has been transformative. Pugh (2002) defined transformative experience as expanded perception and value of a concept resulting from an individual seeking out or taking advantage of opportunities to use the concept as a new way of seeing the world. Transformative experience may be a better gauge of student outcomes in the current study because its measure relies on the same

student perceptions as those used to determine teacher legitimacy. Additionally, transformative experience is independent of performance. Students who do not “test well” or for whom delivering a briefing may be a horrifying experience may still internalize the concepts taught and use them as a lens through which to view their worlds.

Hierarchical regressions run on data from this sample show that scores on the teacher legitimacy survey explain a significant amount of variance in students’ perceptions of the extent to which their experience at SOS have been transformative. Although the effect size of this relationship was small ( $r^2 = .065$ ), the significance of the relationship suggests teacher legitimacy had a role to play in the transformative experience of students. It further suggests teacher legitimacy is a component, a seemingly important component, of teacher effectiveness characteristics.

### **Implications of Research Findings**

#### **Theoretical Implications**

One of the significant contributions of this study is the addition of teacher legitimacy as a component of the already established teacher effectiveness characteristics. It brings together the legitimacy work of social psychologists (Ford & Johnson, 1998; Tyler, 2006; Zelditch, 2001) and the teacher effectiveness work of educators (Berg & Lindseth, 2004; Feldman 1976; Lowman, 1996) to focus the efforts of teacher educators and possibly improve teacher preparation.

This study established a theoretical framework for teacher legitimacy. It used the perception of students, those whose perceptions matter most when it comes to teacher qualities, to identify characteristics and teachers’ behaviors that show this legitimacy. This study also establishes a marker in the educational research area. It lays the

groundwork for further study into the concept of teacher legitimacy and its efficacy to those who prepare teachers to teach adults. Further, this study established the identified characteristics as belonging in a single, uni-dimensional construct that is likely one of several components in the teacher effectiveness realm. It begins to narrow the focus of researchers and educators alike on this single dimension as part of the wide field of teacher effectiveness. Additionally, this study showed that teacher legitimacy, and the characteristics that comprise it, have a significant impact on students' perceptions of transformative experience, personally worthwhile experiences that lead to an expansion of perception and value (Pugh, 2002)

Finally, this study has added to the body of knowledge in the area of power and authority by providing a "theoretical elaboration of authority" as called for by Pace and Hemmings (2007). It examined the foundation of authority, legitimacy, and supplemented previous research regarding the student/teacher interactions that result in authority relationships, those that ultimately give students the perceptions their teachers are legitimate.

### **Practical Implications**

Clearly, teacher education matters (Darling-Hammond, 2000), but how future teachers should be educated is still under debate (Ball & Forzani, 2010). This study suggests that for a population of adult learners, legitimacy is one skill set that could make a difference in training future faculty. It is extremely important that educators be able to define singular constructs related to teacher effectiveness in order to properly train and educate future teachers of adult learners. In the current study, adult learners identified characteristics and corresponding behaviors that lead to the perception of legitimacy.

These are clear and concise and ready to be added to faculty development curricula across the country.

This may represent a paradigm shift for the teacher education community. With words like subordinate and superordinate, this concept may sound more like it belongs in business or even the military. I know words matter. However, these power relationships exist and are important to student outcomes even if many in the field of education do not feel the words used to describe them are appropriate. Whatever words are used to describe the relationship, researchers must be aware of the effect of the quality of these relationships on student outcomes.

Again, I am not suggesting these 18 characteristics are the epitome of teacher effectiveness: quite the contrary. These are simply a necessary, but not sufficient, part of the vast array of characteristics and behaviors teachers must bring forth in the adult-learner classroom in order to be effective; in order to produce positive student outcomes.

As this study was conducted on a Air Force population, its results have implication for faculty development in the Air Force. Because many Air Force members are represented by the sample from the current study, the concept of teacher legitimacy should be implemented in all faculty development curricula Air Force-wide. Additionally, Air Force curriculum developers should examine the concept of transformative experience to gauge its utility for educating Air Force officers and enlisted personnel.

### **Limitations of the Study**

Several limitations exist in this study. First and foremost is the use a convenience sample that consisted of only mid-level military officers. The demographic

characteristics of this sample, particularly age and education level, make it very difficult to generalize the results to a wide range of students. The sample used in this study likely identified characteristics of legitimate teachers that would be different in elementary school, high school, and the undergraduate setting. For example, the concept of credentialing was important to this military sample, as many of them face peril every day and rely on the credentials (along with the expertise, experience, and passion) of those who teach them and lead them to ensure they will survive to fight another day. As another example, in a sample more concerned with earning grades than learning (e.g., high school students, college freshmen) characteristics of helpful teachers, teachers who “teach the test,” may have been more likely to appear in the definition of legitimacy. Likewise, elementary students may be more focused on nurturing characteristics. With these types of differences inherent, generalization of the findings to students outside this specific demographic should be made with caution.

A second limitation of this study involves the use of self-report surveys. Students were asked their perceptions and opinions regarding the legitimacy of their primary instructors. Social desirability, the halo effect, and/or other response bias effects could be at work here and it is possible the responses of participants may not reflect their true beliefs and attitudes.

A third limitation of this study is related to the selection and inclusion of extraneous variables. Although these variables were selected based on the literature review, it is possible other variables might have needed to be controlled for. For example, as noted above, with this sample student motivation levels and/or self-efficacy

may have played a part in the non-significance of the relationship between legitimacy and end-of-course scores. These variables likely should have been added as control variables.

### **Recommendations for Future Studies**

This study provides an initial foray into teacher legitimacy and its relationship to student outcomes. Therefore, much more work needs to be done. First, this study should be replicated on as many different populations as possible. As noted above, there were likely differences in the way different age and education levels see the concept of teacher legitimacy. Continued replication among varied populations should assist researchers in this area in finding a common core of characteristics that define legitimacy

Likewise, it would be of interest to determine if the defining characteristics of teacher legitimacy identified in this study hold across differing cultures. For example, cultures that are more collectivist in nature may find teachers who espouse teamwork over individual efforts more legitimate. Future work on teacher legitimacy should include a comparison of defining characteristics from different areas of the United States as well as from different countries.

Follow-on studies should attempt to identify whether there are mediators to or moderators in the link between teacher legitimacy and student outcomes. As noted earlier, student motivation might be used as a control variable in future studies.

However, it is likely that the sample used in the current study, the all military sample, had less variability in motivation (i.e., all were highly-motivated). Other samples, however, may have more variability (college undergraduates, for example may have many differing levels of motivation). Because there was more variability, teacher legitimacy might have

had a greater effect on student performance in other populations. Thus, motivation might also be investigated as a moderator variable.

### **Summary**

This study indicated students are passionate about the characteristics that make their teacher effective. Specifically, participants in this study readily identified characteristics and behaviors that give them the perception their teachers are legitimate. Analysis of data from this study showed legitimacy to be a uni-dimensional construct that plays an important role in determining student outcomes. Without legitimate teachers, students are likely to fare worse in the classroom setting. Armed with the knowledge gained from this study, teacher educators have another tool with which to supply their students. These future teachers can go forth with confidence, knowing as they become legitimate in the eyes of their students, their students will realize more positive outcomes.

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**APPENDIX A**

**TEACHER LEGITIMACY SURVEY USED IN PREVIOUS STUDY**

## Development of an Operational Definition of Teacher Legitimacy Survey

Power has its place. When authoritarian leadership styles are needed, when a superior absolutely needs a subordinate to get a task done, the use of power is a necessary evil. Not every leadership situation, however, is best handled using power. Often, the factory foreman needs his line workers to get a job done on schedule, on budget, per contract specifications. This is not a life and death situation and using the leadership style suited for one won't work; using coercive power in this situation won't produce optimum results. The foreman will have to somehow rely on the workers' own sense of obligation to him and to the company to get this work done and done well. In many situations where a superior needs to influence his subordinates with something other than power, the sense of obligation comes from the subordinates' feeling that it is fitting, proper, and right for the superior to make decisions that affect them and that the superior "deserves" to be obeyed. This characteristic ascribed to the superior, is known as legitimacy. Definitions of legitimacy are varying, but generally agree on a perception that the actions of the person or organization in question are just or proper within some system of beliefs or values.

Research is vague regarding the concept of legitimacy as it applies in an educational setting. Borrowing from social psychology, it can be said that students would perceive their teachers as legitimate if the teachers had qualities that made the students feel a) the teacher deserves to be standing in front them teaching, b) it is right for the teacher to make decisions affecting the students' academic careers, c) more likely to adhere to the course guidelines/policies, d) the course and the material being presented is worthwhile, and the students could commit to its goals and objectives, and e) a sense of loyalty to the teacher.<sup>1</sup>

The purpose of the survey in which you are about to participate is to develop a list of qualities or characteristics a teacher must possess in order to be perceived as legitimate by his or her students.

Below, you are presented with a list of teacher qualities. Keeping "a" through "e" above in mind, rate each of the qualities with regard to its importance to teacher legitimacy, 1 being not at all important, meaning this quality has nothing to do with teacher legitimacy and 5 being extremely important, meaning a teacher could absolutely never gain legitimacy without this quality. Assume you are building a training program to give teachers the qualities that lead to legitimacy. Which qualities would you want them to have and what would your priorities be? Remember it is believed legitimacy is necessary but not sufficient for a teacher to be effective. This survey is asking about the qualities of a legitimate teacher as described in "a" through "e" above, not necessarily those of an effective teacher.

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<sup>1</sup> Adapted from: a), b), e) Tyler, T. R. (2006). Psychological perspectives on legitimacy and legitimation. *Annual Review of Psychology*, 57, 375-400. doi:10.1146/annurev.psych.57.102904.190038, c) Van der Toorn, J., Tyler, T. R., & Jost, J. T. (2011). More than fair: Outcome dependence, system justification, and the perceived legitimacy of authority figures. *Journal of Experimental Social Psychology*, 47, 127-138. doi:10.1016/j.jesp.2010.09.003, d) Tyler, T. R., & Blader, S. (2000). *Cooperation in groups*. Philadelphia, PA: Psychological Press.

Legitimate teacher:

- a) The teacher deserves to be standing in front of students teaching
- b) It is right for the teacher to make decisions affecting students' academic careers
- c) Students are more likely to adhere to the course guidelines/policies
- d) The course and the material being presented are worthwhile, and the students could commit to its goals and objectives
- e) Students feel a sense of loyalty to the teacher

Qualities:

|               | 1<br>Not at All<br>Important | 2<br>Somewhat<br>Important | 3<br>Important | 4<br>Very<br>Important | 5<br>Extremely<br>Important |
|---------------|------------------------------|----------------------------|----------------|------------------------|-----------------------------|
| Approachable  |                              |                            |                |                        |                             |
| Authoritative |                              |                            |                |                        |                             |
| Available     |                              |                            |                |                        |                             |
| Caring        |                              |                            |                |                        |                             |
| Challenging   |                              |                            |                |                        |                             |
| Clear         |                              |                            |                |                        |                             |
| Committed     |                              |                            |                |                        |                             |
| Communicative |                              |                            |                |                        |                             |
| Concerned     |                              |                            |                |                        |                             |
| Confident     |                              |                            |                |                        |                             |
| Creative      |                              |                            |                |                        |                             |
| Dedicated     |                              |                            |                |                        |                             |
| Demanding     |                              |                            |                |                        |                             |
| Educated      |                              |                            |                |                        |                             |
| Encouraging   |                              |                            |                |                        |                             |
| Enthusiastic  |                              |                            |                |                        |                             |
| Expert        |                              |                            |                |                        |                             |
| Fair          |                              |                            |                |                        |                             |
| Friendly      |                              |                            |                |                        |                             |
| Fun           |                              |                            |                |                        |                             |
| Helpful       |                              |                            |                |                        |                             |
| Honest        |                              |                            |                |                        |                             |
| Humorous      |                              |                            |                |                        |                             |
| Inspiring     |                              |                            |                |                        |                             |
| Intellectual  |                              |                            |                |                        |                             |

|               |  |  |  |  |  |
|---------------|--|--|--|--|--|
| Interesting   |  |  |  |  |  |
| Knowledgeable |  |  |  |  |  |
| Open-minded   |  |  |  |  |  |
| Organized     |  |  |  |  |  |
| Patient       |  |  |  |  |  |
| Personable    |  |  |  |  |  |
| Prepared      |  |  |  |  |  |
| Professional  |  |  |  |  |  |
| Respectable   |  |  |  |  |  |
| Respectful    |  |  |  |  |  |
| Stimulating   |  |  |  |  |  |
| Unbiased      |  |  |  |  |  |
| Understanding |  |  |  |  |  |

**APPENDIX B**  
**INSTITUTIONAL REVIEW BOARD APPROVAL LETTER**

UNIVERSITY of  
NORTHERN COLORADO



*Institutional Review Board*

DATE: March 21, 2013  
TO: Douglass Drake  
FROM: University of Northern Colorado (UNCO) IRB  
PROJECT TITLE: [405647-2] Defining and Measuring Teacher Legitimacy  
SUBMISSION TYPE: Amendment/Modification  
ACTION: APPROVAL/VERIFICATION OF EXEMPT STATUS  
DECISION DATE: March 21, 2013

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Sherry May at 970-351-1910 or [Sherry.May@unco.edu](mailto:Sherry.May@unco.edu). Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.

**APPENDIX C**

**SQUADRON OFFICER COLLEGE COMMANDER'S  
ENDORSEMENT MEMORANDUM**



DEPARTMENT OF THE AIR FORCE  
AIR UNIVERSITY (AETC)

FEB 28 2013

MEMORANDUM FOR INSTITUTIONAL REVIEW BOARD

FROM: SOC/CC  
125 Chennault Cir  
Maxwell AFB AL 36112-6430

SUBJECT: Indorsement of Lt Col Douglas Drake's Planned Research with SOS Students

1. Lieutenant Colonel Douglas Drake is completing his dissertation research as part of his degree requirements under an AFIT-sponsored PhD program. He is pursuing an educational psychology doctorate at University of Northern Colorado having competed for an Air University advanced academic degree slot offered allocated to Squadron Officer College.
2. Lieutenant Colonel Drake has requested the opportunity to work directly with my Squadron Officer School (SOS) students this spring in order to complete his research. I understand that as part of his requirements to complete the research, he needs to secure approval from the relevant Institutional Review Board (IRB), and that this memorandum is necessary for him to move forward on IRB approval.
3. After a review of Lieutenant Colonel Drake's research plans and an interview with him that I held this month, I endorse his plans to work with my students, provided all of the events related to his research are conducted in a voluntary manner. For questions, please contact my executive officer, Captain James Morrison, at 334-953-2806.

A handwritten signature in black ink, appearing to read "M G Czelusta", is written over a horizontal line.

MARK G. CZELUSTA, Colonel, USAF  
Commander

**APPENDIX D**  
**FOCUS GROUP PROTOCOL**

### Legitimate Teacher Characteristics Focus Group

The researcher will read the following to the focus group participants then discuss the five questions.

Power has its place. When authoritarian leadership styles are needed, when a superior absolutely needs a subordinate to get a task done, the use of power is a necessary evil. Not every leadership situation, however, is best handled using power. Often, the factory foreman needs his line workers to get a job done on schedule, on budget, per contract specifications. This is not a life and death situation and using the leadership style suited for one won't work; using coercive power in this situation won't produce optimum results. The foreman will have to somehow rely on the workers' own sense of obligation to him and to the company to get this work done and done well. In many situations where a superior needs to influence his subordinates with something other than power, the sense of obligation comes from the subordinates' feeling that it is fitting, proper, and right for the superior to make decisions that affect them and that the superior "deserves" to be obeyed. This characteristic ascribed to the superior is known as legitimacy. Definitions of legitimacy are varying, but generally agree on a perception that the actions of the person or organization in question are just or proper within some system of beliefs or values.

The purpose of this focus group is to gather of your perceptions about the characteristics displayed by legitimate teachers. Research has agreed that procedural justice – fairness – is one characteristic that would make subordinates perceive a superior as legitimate. What I'd like to discuss with you today are your ideas about the characteristics a teacher would need to have in order for you to perceive him or her as legitimate.

Recall a current or previous teacher who made you feel<sup>2</sup>:

- a) he or she deserves to be standing in front you teaching?
- b) it is right for the teacher to make decisions affecting your academic career?
- c) more likely to adhere to the course guidelines/policies?
- d) the course you're taking and the material being presented is worthwhile, and you could commit to its goals and objectives?
- e) a sense of loyalty to the teacher?

What characteristics did that teacher display that made you feel that way?

What behaviors did that teacher exhibit that define those characteristics?

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<sup>2</sup> Adapted from: a), b), e) Tyler, T. R. (2006). Psychological perspectives on legitimacy and legitimation. *Annual Review of Psychology*, 57, 375-400. doi:10.1146/annurev.psych.57.102904.190038, c) Van der Toorn, J., Tyler, T. R., & Jost, J. T. (2011). More than fair: Outcome dependence, system justification, and the perceived legitimacy of authority figures. *Journal of Experimental Social Psychology*, 47, 127-138. doi:10.1016/j.jesp.2010.09.003, d) Tyler, T. R., & Blader, S. (2000). *Cooperation in groups*. Philadelphia, PA: Psychological Press.

**APPENDIX E**  
**INITIAL TEACHER LEGITIMACY SCALE**

Teacher Legitimacy Scale  
(Adapted from Buskist et al., 2002)

**Section I.** Instructions: Below are 24 characteristics of teacher legitimacy and some examples of the behaviors that define them. Please rate your primary instructor on the extent to which you believe he or she exhibits behaviors reflective of the given characteristic.

Please use the following scale for ratings:

1 = My instructor never exhibits behaviors reflective of this characteristic

2 = My instructor rarely exhibits behaviors reflective of this characteristic

3 = My instructor sometimes exhibits behaviors reflective of this characteristic

4 = My instructor frequently exhibits behaviors reflective of this characteristic

5 = My instructor always exhibits behaviors reflective of this characteristic

**Section II.** Teacher Legitimacy Scale

| Item | Teacher Legitimacy Characteristic and Corresponding Behavior   |   |   |   |   |
|------|--|---|---|---|---|
| 1    | <i>Respectful</i> (Does not humiliate or embarrass students in class, is polite to students [says thank you and please, etc.], does not interrupt students while they are talking, does not talk down to students)           |   |   |   |   |
|      | 1  | 2 | 3 | 4 | 5 |
| 2    | <i>Available</i> (Offers his/her time outside of class for student questions, takes measures to ensure students know how to contact him/her outside of class, comes to class early or stays after class to answer questions) |   |   |   |   |
|      | 1  | 2 | 3 | 4 | 5 |
| 3    | <i>Passion</i> (High energy in lectures/discussions, charismatic teaching style, dynamic teaching methods)   |   |   |   |   |
|      | 1  | 2 | 3 | 4 | 5 |

|    |  |
|----|--|
| 4  | <i>Expertise</i> (Quickly and accurately answers questions without needing to consult outside materials, displays knowledge over and above the course text, expands lessons to cover all student knowledge levels as needed) |
|    | 1                      2                      3                      4                      5  |
| 5  | <i>Invested</i> (Shows concern for student achievement, initiates discussions with students to gauge progress, expends necessary resources to ensure student learning, provides timely feedback)                             |
|    | 1                      2                      3                      4                      5  |
| 6  | <i>Humble</i> (Acknowledges his/her own limitations, accepts feedback from students regarding ways to improve course/lessons, explains methods/rationale for material if necessary)  |
|    | 1                      2                      3                      4                      5  |
| 7  | <i>Dependable</i> (Starts class on time, returns graded assignments/feedback when promised, consistent grading practices)  |
|    | 1                      2                      3                      4                      5  |
| 8  | <i>Honest</i> (Admits mistakes, teaching output congruent with stated objectives, does what he/she says he'll/she'll do)   |
|    | 1                      2                      3                      4                      5  |
| 9  | <i>Challenging</i> (Delivers material at a level just above current student knowledge, holds students to higher standard, expects more of students than they think they are capable of)                                      |
|    | 1                      2                      3                      4                      5  |
| 10 | <i>Flexible</i> (Recognizes "on-the-fly" learning opportunities and uses them where possible, adapts lessons/material to student performance when necessary, meets the needs of different learning styles)                   |
|    | 1                      2                      3                      4                      5  |
| 11 | <i>Motivated</i> (Excited about role as a teacher, maintains enthusiasm throughout the course, talks about his/her own continued learning)   |
|    | 1                      2                      3                      4                      5  |

|    |   |   |   |   |   |   |
|----|---|---|---|---|---|---|
| 12 | <i>Unbiased</i> (Does not push his/her opinions on students, allows students freedom to express their own opinions, allows students to question the status quo)   | 1 | 2 | 3 | 4 | 5 |
| 13 | <i>Confident</i> (Doesn't "fold" under pressure, answers questions without hesitation, conducts lessons without fumbling for guidance)  | 1 | 2 | 3 | 4 | 5 |
| 14 | <i>Experienced</i> (Uses his/her own real-world experience as classroom examples, speaks from the point of view of one who has done the things about which he/she is talking, displays "field knowledge" )                            | 1 | 2 | 3 | 4 | 5 |
| 15 | <i>Relates to Students</i> (Shows he/she remembers what it was like to be a student, shows understanding of individual students' circumstances, develops/maintains peer-like relationship with students while remaining professional) | 1 | 2 | 3 | 4 | 5 |
| 16 | <i>Communication Skills</i> (Speaks clearly, uses everyday language to explain difficult concepts, dynamic speaker)   | 1 | 2 | 3 | 4 | 5 |
| 17 | <i>Credentialed</i> (Has gained appropriate degree/certification, seeks continued professional development, stays "current")  | 1 | 2 | 3 | 4 | 5 |
| 18 | <i>Approachable</i> (Welcomes student inquiry, encourages open engagement, smiles)  | 1 | 2 | 3 | 4 | 5 |
| 19 | <i>Professional</i> (Maintains neat/clean appearance, exhibits appropriate "on" and "off-duty" behavior, fosters appropriate educational relationships)   | 1 | 2 | 3 | 4 | 5 |

**APPENDIX F**  
**FINAL TEACHER LEGITIMACY SURVEY**

Teacher Legitimacy Scale  
(Adapted from Buskist et al., 2002)

**Section I.** Instructions: Below are 18 characteristics of teacher legitimacy and some examples of the behaviors that define them. Please rate your primary instructor on the extent to which you believe he or she exhibits behaviors reflective of the given characteristic.

Please use the following response options for ratings:

1 = My instructor **infrequently** exhibits behaviors reflective of this characteristic

2 = My instructor **frequently** exhibits behaviors reflective of this characteristic

3 = My instructor **always** exhibits behaviors reflective of this characteristic

**Section II.** Teacher Legitimacy Scale

| Item | Teacher Legitimacy Characteristic and Corresponding Behavior   |   |   |
|------|--|---|---|
| 1    | <i>Respectful</i> (Does not humiliate or embarrass students in class, is polite to students [says thank you and please, etc.], does not interrupt students while they are talking, does not talk down to students)           |   |   |
|      | 1  | 2 | 3 |
| 2    | <i>Available</i> (Offers his/her time outside of class for student questions, takes measures to ensure students know how to contact him/her outside of class, comes to class early or stays after class to answer questions) |   |   |
|      | 1  | 2 | 3 |
| 3    | <i>Passion</i> (High energy in lectures/discussions, charismatic teaching style, dynamic teaching methods)   |   |   |
|      | 1  | 2 | 3 |
| 4    | <i>Expertise</i> (Quickly and accurately answers questions without needing to consult outside materials, displays knowledge over and above the course text, expands lessons to cover all student knowledge levels as needed) |   |   |
|      | 1  | 2 | 3 |
| 5    | <i>Invested</i> (Shows concern for student achievement, initiates discussions with students to gauge progress, expends necessary resources (e.g., time, money, etc.) to ensure student learning, provides timely feedback)   |   |   |
|      | 1  | 2 | 3 |

|    |   |   |   |   |
|----|---|---|---|---|
| 6  | <i>Humble</i> (Acknowledges his/her own limitations, accepts feedback from students regarding ways to improve course/lessons, explains methods/rationale for material if necessary)   | 1 | 2 | 3 |
| 7  | <i>Honest</i> (Admits mistakes, teaching output congruent with stated objectives, does what he/she says he/she will do)   | 1 | 2 | 3 |
| 8  | <i>Challenging</i> (Delivers material at a level just above current student knowledge, holds students to higher standard, expects more from students than they think they are capable of)   | 1 | 2 | 3 |
| 9  | <i>Flexible</i> (Recognizes “on-the-fly” learning opportunities and uses them where possible, adapts lessons/material to student performance when necessary, meets the needs of different learning styles)                            | 1 | 2 | 3 |
| 10 | <i>Motivated</i> (Excited about role as a teacher, maintains enthusiasm throughout the course, talks about his/her own continued learning)  | 1 | 2 | 3 |
| 11 | <i>Unbiased</i> (Does not push his/her opinions on students, allows students freedom to express their own opinions, allows students to question the status quo)   | 1 | 2 | 3 |
| 12 | <i>Confident</i> (Doesn’t “fold” under pressure, answers questions without hesitation, conducts lessons without fumbling for guidance)  | 1 | 2 | 3 |
| 13 | <i>Experienced</i> (Uses his/her own real-world experience as classroom examples, speaks from the point of view of one who has done the things about which he/she is talking, displays “field knowledge” )                            | 1 | 2 | 3 |
| 14 | <i>Relates to Students</i> (Shows he/she remembers what it was like to be a student, shows understanding of individual students’ circumstances, develops/maintains peer-like relationship with students while remaining professional) | 1 | 2 | 3 |

|    |   |   |   |   |
|----|---|---|---|---|
| 15 | <i>Communication Skills</i> (Speaks clearly, uses everyday language to explain difficult concepts, speaks dynamically)                                  |   |   |   |
|    |   | 1 | 2 | 3 |
| 16 | <i>Credentialed</i> (Has gained appropriate degree/certification, seeks continued professional development, stays “current”)                            |   |   |   |
|    |   | 1 | 2 | 3 |
| 17 | <i>Approachable</i> (Welcomes student inquiry, encourages open engagement, smiles)  |   |   |   |
|    |   | 1 | 2 | 3 |
| 18 | <i>Professional</i> (Maintains neat/clean appearance, exhibits appropriate “on” and “off-duty” behavior, fosters appropriate educational relationships) |   |   |   |
|    |   | 1 | 2 | 3 |

**APPENDIX G**

**ORIGINAL TRANSFORMATIVE EXPERIENCE MEASURE**

### Transformative Experience Measure

(for a study of transformative experiences in the geosciences)

**Instructions:** For each question, select the response that best matches the extent to which you agree or disagree. “Outside of school” refers to your everyday life and experience when you are not in class or working on school assignments.

[Responses will be on a 4-point Likert scale, Strongly Disagree to Strongly Agree]

(Adapted from Pugh et al., 2010)

1. I talk with others about geoscience concepts during my geoscience courses.
2. Outside of school, I talk with others about geoscience concepts.
3. I talk with others about geoscience concepts just for the fun of it.
4. During class time, I think about how geoscience concepts apply to real-world objects and events.
5. Outside of school, I think about geoscience concepts.
6. I find myself thinking about geoscience concepts in everyday situations.
7. I apply the knowledge I’ve learned about geoscience during class.
8. Outside of school, I apply the knowledge I’ve learned about geoscience.
9. I apply the stuff I’ve learned about geoscience even when I didn’t have to.
10. I look for chances to apply my knowledge of geoscience in my everyday life.
11. I think about the earth differently now that I have learned about geoscience concepts.
12. During class, I notice examples of geoscience concepts.
13. If I see a really interesting landform, rock, weather pattern, or river system (either in real life, in a magazine, or on TV), then I think about it in terms of geoscience concepts.
14. The concepts I learned in my geoscience classes changed the way I see the earth.
15. I can’t help but see the earth in terms of geoscience concepts now.
16. I notice examples of geoscience in my everyday life that I would not have noticed before taking geoscience courses.
17. Outside of school, I look for examples of geoscience concepts.
18. Learning about geoscience concepts is useful for my future studies or work.
19. Geoscience concepts help me to better understand the world around me.
20. Knowledge of geoscience concepts is useful in my current, everyday life.
21. I find that geoscience concepts make my current, out-of-school experience more meaningful and interesting.
22. Geoscience concepts make the earth much more interesting.
23. In class, I find it interesting to learn about geoscience concepts.
24. I think geoscience is an interesting subject.
25. I find it interesting in class when we talk about the earth in terms of geoscience concepts.
26. I am interested when I hear things about geoscience concepts outside of school.
27. Outside of school, I find it exciting to think about geoscience concepts.

**APPENDIX H**

**SOS TRANSFORMATIVE EXPERIENCE MEASURE**

### SOS Transformative Experience Measure (Adapted from Pugh et al., 2010)

**Instructions:** For each question, select the response that best matches the extent to which you agree or disagree. “Outside of class” refers to your everyday life and experience when you are not in class or working on assignments.

For each question use the following scale to respond:

1 – Strongly Disagree, 2 – Disagree, 3 – Agree, 4 – Strongly Agree

1. I talk with others about SOS concepts during my SOS classes.
2. Outside of class, I talk with others about SOS concepts.
3. I talk with others about SOS concepts just for the fun of it.
4. During class time, I think about how SOS concepts apply to real-world situations and events.
5. Outside of class, I think about SOS concepts.
6. I find myself thinking about SOS concepts in everyday situations.
7. I apply the knowledge I’ve learned about SOS concepts during class.
8. Outside of class, I apply the knowledge I’ve learned about SOS concepts.
9. I apply the stuff I’ve learned about SOS concepts even when I don’t have to.
10. I look for chances to apply my knowledge of SOS concepts in my everyday life.
11. I think about the AF differently now that I have learned SOS concepts.
12. During class, I notice examples of SOS concepts.
13. If I hear about a really interesting leadership situation, then I think about it in terms of SOS concepts.
14. The concepts I learned in my SOS classes changed the way I see the AF.
15. I can’t help but see the AF in terms of SOS concepts now.
16. I notice examples of SOS concepts in my everyday life that I would not have noticed before attending SOS.
17. Outside of class, I look for examples of SOS concepts.
18. Learning about SOS concepts is useful for my future studies or work.
19. SOS concepts help me to better understand the world around me.
20. Knowledge of SOS concepts is useful in my current, everyday life.
21. I find that SOS concepts make my current, out-of-class experience more meaningful and interesting.
22. SOS concepts make the AF much more interesting.
23. In class, I find it interesting to learn SOS concepts.
24. I think SOS content is interesting.
25. I find it interesting in class when we talk about the AF in terms of SOS concepts.
26. I am interested when I hear things about SOS concepts outside of class.
27. Outside of class, I find it exciting to think about SOS concepts.
28. I find it fascinating to be able to use SOS concepts in my everyday life.

**APPENDIX I**  
**TEACHER CARING SCALE**

### Teacher Caring Scale

Use the following bipolar scales to describe your current instructor. Mark an X on the line which best describes where your opinion lies on the continuum.

My instructor (is):

|                           |       |       |       |       |       |       |       |                                    |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|------------------------------------|
| Cares About Me            | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Doesn't Care About Me              |
| Has My Interests at Heart | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Doesn't Have My Interests at Heart |
| Self-centered             | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Not Self-centered                  |
| Unconcerned With Me       | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Concerned With Me                  |
| Insensitive               | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Sensitive                          |
| Not Understanding         | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Understanding                      |
| Unresponsive              | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Responsive                         |
| Understands How I Feel    | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Doesn't Understand How I Feel      |
| Understands How I Think   | _____ | _____ | _____ | _____ | _____ | _____ | _____ | Doesn't Understand How I Think     |

**APPENDIX J****DETAILED SUMMARIES OF REGRESSIONS RUN WITHOUT  
POSSIBLY INFLUENTIAL CASES**

Table 13

*Hierarchical Multiple Regression Analysis: Scores on the Teacher Legitimacy Scale  
Explaining Scores on the Transformative Experience Measure, Case 4 Removed*

| Variable   | <i>B</i> | <i>SE B</i> | $\beta$ | $\Delta R^2$ | $\Delta F$ | <i>df</i> |
|------------|----------|-------------|---------|--------------|------------|-----------|
| Step 1     |          |             |         | .027*        | 2.804      | 4, 406    |
| Flt/CC Exp | .001     | .008        | .006    |              |            |           |
| Male       | .051     | .117        | .022    |              |            |           |
| Bach       | -.421    | .186        | -.128*  |              |            |           |
| Mast       | -.604    | .186        | -.183** |              |            |           |
| Step 2     |          |             |         | .012         | .974       | 5, 401    |
| Flt/CC Exp | .005     | .008        | .031    |              |            |           |
| Male       | .059     | .118        | .025    |              |            |           |
| Bach       | -.426    | .187        | -.129*  |              |            |           |
| Mast       | -.606    | .186        | -.184** |              |            |           |
| Black      | .340     | .214        | .099    |              |            |           |
| Bull       | .035     | .211        | .010    |              |            |           |
| Cent       | .008     | .182        | .003    |              |            |           |
| Drag       | -.249    | .209        | -.072   |              |            |           |
| Knight     | -.279    | .222        | -.079   |              |            |           |
| Step 3     |          |             |         | .028**       | 12.003     | 1, 400    |
| Flt/CC Exp | .001     | .008        | .003    |              |            |           |
| Male       | .044     | .116        | .019    |              |            |           |
| Bach       | -.392    | .185        | -.119*  |              |            |           |
| Mast       | -.538    | .185        | -.164** |              |            |           |
| Black      | .400     | .212        | .117    |              |            |           |
| Bull       | -.027    | .209        | -.008   |              |            |           |
| Cent       | .118     | .182        | .038    |              |            |           |
| Drag       | -.301    | .207        | -.088   |              |            |           |
| Knight     | -.234    | .219        | -.066   |              |            |           |
| TLS Score  | .042     | .012        | .176**  |              |            |           |

*Note.*  $N = 411$ .  $R^2$  for final model = .067,  $F(10, 400) = 2.853$ ,  $p = .002$ . TLS = Teacher Legitimacy Scale; TEM = Transformative Experience Measure; Flt/CC Exp = Flight Commander Experience; Bach = Bachelor's Degree; Mast = Master's Degree; Black = Blackhawks; Bull = Bulls; Cent = Centurions; Drag = Dragons; Knight = Knights

\* $p < .05$ . \*\* $p < .01$ .

Table 14

*Hierarchical Multiple Regression Analysis: Scores on the Teacher Legitimacy Scale  
Explaining Scores on the Transformative Experience Measure, Cases 4, and 304  
Removed*

| Variable   | <i>B</i> | <i>SE B</i> | $\beta$ | $\Delta R^2$ | $\Delta F$ | <i>df</i> |
|------------|----------|-------------|---------|--------------|------------|-----------|
| Step 1     |          |             |         | .029*        | 3.034      | 4, 405    |
| Flt/CC Exp | .003     | .008        | .017    |              |            |           |
| Male       | .063     | .115        | .027    |              |            |           |
| Bach       | -.395    | .182        | -.122*  |              |            |           |
| Mast       | -.620    | .182        | -.192** |              |            |           |
| Step 2     |          |             |         | .010         | .843       | 5, 400    |
| Flt/CC Exp | .006     | .008        | .039    |              |            |           |
| Male       | .068     | .115        | .029    |              |            |           |
| Bach       | -.403    | .183        | -.125*  |              |            |           |
| Mast       | -.625    | .182        | -.194** |              |            |           |
| Black      | .327     | .210        | .098    |              |            |           |
| Bull       | .013     | .206        | .004    |              |            |           |
| Cent       | -.015    | .178        | -.005   |              |            |           |
| Drag       | -.270    | .204        | -.080   |              |            |           |
| Knight     | -.173    | .219        | -.050   |              |            |           |
| Step 3     |          |             |         | .018**       | 7.738      | 1, 399    |
| Flt/CC Exp | .003     | .008        | .016    |              |            |           |
| Male       | .056     | .114        | .024    |              |            |           |
| Bach       | -.379    | .182        | -.117*  |              |            |           |
| Mast       | -.569    | .182        | -.176** |              |            |           |
| Black      | .056     | .114        | .024    |              |            |           |
| Bull       | .378     | .209        | .113    |              |            |           |
| Cent       | -.035    | .205        | -.010   |              |            |           |
| Drag       | .075     | .179        | .025    |              |            |           |
| Knight     | -.310    | .203        | -.092   |              |            |           |
| TLS Score  | -.149    | .217        | -.043** |              |            |           |

*Note.*  $N = 410$ .  $R^2$  for final model = .057,  $F(10, 399) = 2.434$ ,  $p = .008$ . TLS = Teacher Legitimacy Scale; TEM = Transformative Experience Measure; Flt/CC Exp = Flight Commander Experience; Bach = Bachelor's Degree; Mast = Master's Degree; Black = Blackhawks; Bull = Bulls; Cent = Centurions; Drag = Dragons; Knight = Knights

\* $p < .05$ . \*\* $p < .01$ .

Table 15

*Hierarchical Multiple Regression Analysis: Scores on the Teacher Legitimacy Scale  
Explaining Scores on the Transformative Experience Measure, Cases 4, 44, and 304  
Removed*

| Variable   | <i>B</i> | <i>SE B</i> | $\beta$ | $\Delta R^2$ | $\Delta F$ | <i>df</i> |
|------------|----------|-------------|---------|--------------|------------|-----------|
| Step 1     |          |             |         | .029*        | 3.057      | 4, 404    |
| Flt/CC Exp | .004     | .008        | .028    |              |            |           |
| Male       | .074     | .112        | .033    |              |            |           |
| Bach       | -.410    | .178        | -.130*  |              |            |           |
| Mast       | -.595    | .178        | -.189** |              |            |           |
| Step 2     |          |             |         | .010         | .804       | 5, 399    |
| Flt/CC Exp | .007     | .008        | .048    |              |            |           |
| Male       | .077     | .113        | .034    |              |            |           |
| Bach       | -.420    | .179        | -.133*  |              |            |           |
| Mast       | -.605    | .178        | -.192** |              |            |           |
| Black      | .311     | .205        | .095    |              |            |           |
| Bull       | -.011    | .202        | -.003   |              |            |           |
| Cent       | -.039    | .174        | -.013   |              |            |           |
| Drag       | -.294    | .200        | -.090   |              |            |           |
| Knight     | -.067    | .215        | -.020   |              |            |           |
| Step 3     |          |             |         | .016**       | 6.650      | 1, 398    |
| Flt/CC Exp | .004     | .008        | .025    |              |            |           |
| Male       | .066     | .112        | .029    |              |            |           |
| Bach       | -.397    | .178        | -.126*  |              |            |           |
| Mast       | -.554    | .178        | -.176** |              |            |           |
| Black      | .357     | .205        | .109    |              |            |           |
| Bull       | -.053    | .201        | -.016   |              |            |           |
| Cent       | .044     | .176        | .015    |              |            |           |
| Drag       | -.329    | .199        | -.100   |              |            |           |
| Knight     | -.049    | .214        | -.014   |              |            |           |
| TLS Score  | .031     | .012        | .133**  |              |            |           |

*Note.*  $N = 409$ .  $R^2$  for final model = .055,  $F(10, 398) = 2.310$ ,  $p = .012$ . TLS = Teacher Legitimacy Scale; TEM = Transformative Experience Measure; Flt/CC Exp = Flight Commander Experience; Bach = Bachelor's Degree; Mast = Master's Degree; Black = Blackhawks; Bull = Bulls; Cent = Centurions; Drag = Dragons; Knight = Knights

\* $p < .05$ . \*\* $p < .01$ .