LEARNING STYLE AND TEACHING STYLE INTERACTION AND THE EFFECT ON PSYCHOLOGICAL REACTANCE

by

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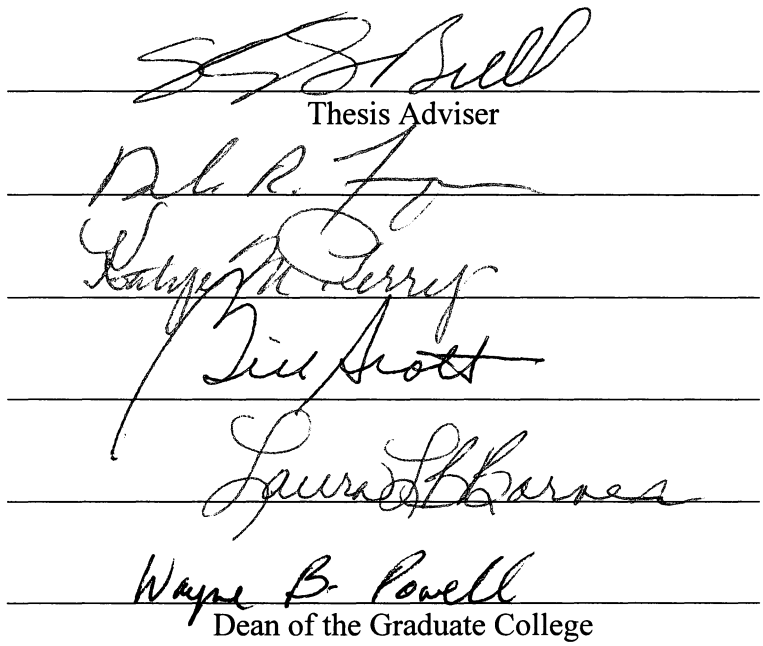

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INTRODUCTION

Why do students fail to perform up to their capabilities in the classroom? Why do students drop out of college? And why do students become management problems in the classroom? These questions have been investigated in diverse ways, but it is the contention of this paper that these student behaviors can be explained in terms of their motivation to have control and freedom over their learning. In any given classroom situation there will be instances when students and teachers are compatible in the way they see the learning process and likewise, situations in which they are incompatible in this view. Most people remember particular teachers they had, whether in grade school, high school, or college, that were easy to understand and relate to. These situations allowed them to progress through the class with little or no trouble. Much of what helped them progress through the class was based upon the way the class was structured, the teacher's style of presenting the information, and the activity level of the rest of the class. Likewise, most individuals can recall teachers that never seemed to make sense, no matter what they said or did. In these classes, every day was a struggle. Focusing on the content of the class was difficult at best, due to the conflicts with the teacher's style of presentation, the organization of the class and/or the others students' interactions in the classroom.

So what happens when an instructor's teaching style and a student's learning style are at odds with one another? What happens when they are in agreement? This study is designed to investigate one potential result of compatibility and incompatibility of teaching style and learning style, namely psychological reactance. The following section provides the reader with a sense of the general nature of the research plan and the structure of the study itself. Psychological reactance theory will be discussed first, followed by a brief description of learning styles, and finally teaching styles will be explored.

Psychological Reactance

Psychological reactance is defined as the motivational drive directed at restoring one's perceived loss of freedom or the threat of freedom (Brehm, 1966). More specifically, it is an individual's attempt to restore freedom and control. When faced with the perceived loss of an expected freedom, people will be motivated to restore that loss of freedom. This definition might better be conceptualized through several examples. First, consider the situation of telling a three-year-old not to jump off the couch. It would be considered typical for the child to go through the following steps: first, he or she will pause for a moment, the precise moment of psychological reactance; then the child will proceed to jump anyway. It is not the overt behavior that is the reactance, although it is a consequence; it is the moment of questioning one's own control and freedom that exudes the essence of psychological reactance. In this situation it is important to note that one could experience reactance and not demonstrate it overtly. Consider another example. A professor wants a class to engage in scholarly dialogue; she announces to the class that

they will participate have group discussions to debate a particular topic. The professor then assigns members to groups. Inevitably, two basic consequences will follow. Some students will immediately adhere to the task, and some will not. In line with Brehm (1966), each person has a different level of reactance given his or her perception of control and freedom. In this class participation scenario, those who are prone to psychological reactance will approach the task differently than those who don't feel that their freedoms are threatened in that situation. Finally, let's portray the pop-psychology rendition of psychological reactance, using it as an impetus for reverse psychology. Reverse psychology is typically the notion that one can induce other people to do something by telling them that they can't do it. It's a paradoxical approach to controlling the behaviors of others. If one thinks about it, reverse psychology could not be used if psychological reactance did not exist. Individuals tell their friends that they cannot do something, fully expecting them to exhibit that behavior anyway. From the standpoint of the reactor, the person's telling him that he cannot do something is restricting his freedom, so he is inclined to choose to do it anyway. This too is at the essence of psychological reactance.

The important things to consider in the preceding examples are the underlying assumptions of psychological reactance theory. The issue of freedom and free behaviors in psychological reactance theory has received considerable time and attention. To Brehm (1966), free behaviors are the main assumption in the theory. Free behaviors are expected to be both physically and mentally realistic for the individual. More simplistically, to Wortman and Brehm (1975), freedom is defined as the expectation of control. Each person has his or her own specific set of free behaviors, and they expect that these

behaviors are realistically possible for the individual. The notion that psychological reactance is a counter-force of an elimination of or threat to an existing freedom dictates that the freedom is something believed to be attainable. For instance one might think that by being an American Citizen one has the freedom to walk across the United States of America on his or her hands if he or she so chooses. However, based on the realization that most people are physically incapable of such an act, the threat of being told that you will no longer be able to walk across the USA on your hands will not produce psychological reactance. This is for the simple reason that the freedom was not realistically possible in the first place. Contrast that with the freedom to drive across one's home state. If one has the time, the money, and the vehicle for such an endeavor, the threat of elimination of this freedom will surely produce a psychological reaction, because something that is deemed realistic has been threatened. In sum, the assumption by the individual that the freedom is important, that the individual has the ability, and that he/she expects to control the outcomes are vitally central to creating psychological reactance in the individual. One might ask if psychological reactance would be manifested if the elimination of the free behavior were for his/her own good, as in instances of protection and safety. Again the production of psychological reactance is contingent on the individual's perception of the free behavior. Sure it may be in his or her best interest to refrain from exhibiting that particular behavior, but, if it is important and seen as a matter of control, then reactance is still bound to occur.

According to the theory it is further assumed that the magnitude of the threat is also important in creating reactance. Naturally, if a set of free behaviors is threatened and one has no doubt that they will be taken away, reactance will be high. But if, on the other

hand, there were a minimal threat to the set of free behaviors, then reactance would be significantly lower. Once again, free behaviors are those that are deemed realistic for that individual. Finally, the implications of the threat to one's freedom of the losses of other freedoms will also affect psychological reactance (Brehm, 1966; Brehm & Brehm, 1981; Wortman & Brehm, 1975). If one knew that the restriction of one freedom could lead to the elimination of similar freedoms, then the level of reactance would be greater than that caused by a restriction on that same single free behavior that had no repercussions for other free behaviors. For instance, in a classroom scenario then, what is presented in the course syllabus sets the tone for the entire class.

Consider these assumptions in relation to the examples given above. In the case of the three-year-old, it is the child's perception of being able to jump from the couch that must precede the reactance. The importance and expectation of the freedom to jump must also be present for reactance to occur. And finally, the threat of the loss of this freedom and the implications for other similar freedoms also contribute to the creation of psychological reactance. Likewise, students who experience reactance must first look at class participation as a free behavior; the choice as to whether to participate must be an expected freedom, and the potential threat to that freedom must be of consequence. And in the last example of the case of reverse psychology, it is expected that one would not try to entice someone else without first assuming that the person has some sort of freedom to make an alternative choice and that some importance is associated with that freedom. Levels of psychological reactance occur to the extent that those who would restrict those freedoms have some power to make the threat legitimate and potentially restrict other freedoms. Therefore, based upon the notion of control and freedom, it is expected that

psychological reactance exists within the typical classroom. It is the goal of this study to illuminate how the teaching style and student learning interaction can influence reactance.

Measurement of Psychological Reactance

Reactance theory has surfaced in several areas of concern to psychological theorists. Reactions to violence, patient responses to therapy, and work place behaviors have all been partially explained in terms of psychological reactance theory (Austin, 1989; Dowd & Wallbrown, 1993; Hockenberry & Billingham, 1993). Despite these research efforts, psychometric assessment of psychological reactance has been relatively sparse, with a few notable exceptions. The Mertz scale (1983), which was developed in Germany, has received criticism concerning its utility in the United States. Criticisms of this scale point to the low reliability and difficulty in translation (Hong & Page, 1989). Another attempt at developing an instrument was made by Dowd and Wallbrown (1993). This scale was developed primarily for use by clinical and counseling practitioners and is aimed at assessment of a client's reactions to therapy. Its specific utility limits its use in other populations. Finally, Hong and Page (1989) developed a 14-item scale entitled the Hong Psychological Reactance Scale (HPRS) with promising results. This scale was factor-analyzed and yielded four distinct factors that purportedly measure an individual predisposition for freedom of choice, conformity reactance, behavioral freedom, and reactions against advice/recommendations. More recently, Hong & Faedda (1996) have refined the HPRS to an 11-item scale, yielding a factor structure similar to previous studies. Further research (Hong, Giannakopoulos, Laing & Williams 1994), using the original 14-item HPRS demonstrated a significant negative relationship with age, while

gender effects were not found. Also, Hong and Giannakopoulos (1994) reported that psychological reactance was related to such personality traits as trait anger, locus of control, and depression. However, it was also reported in this study that self-esteem and psychological reactance were not related. This finding appears to be somewhat at odds with other research on self-esteem and psychological reactance (Brockner, 1983; Brockner & Elkind, 1985; Joubert, 1990). It is expected that an individual whose level of esteem is low will be more likely to conform to different threats to his/her freedoms, whereas, an individual high in self-esteem will be more likely to resist any perceived losses of freedom. Indeed, Brehm and Brehm (1981) state, "If one does not see oneself as competent, reactance against a threat to that freedom will be minimal or nonexistent" (p. 20). This idea is supported by the Wortman and Brehm (1975) integrated reactance model, which suggests that as an individual loses control and has no expectancy to reestablish control, reactance decreases and helplessness follows. Recent research by Hellman & McMillin (1997) demonstrated that one factor of the HPRS serves as a suppressor variable of the other factor with self-esteem. This research has illuminated a major area of concern for future applications of psychological reactance research, namely how to psychometrically measure psychological reactance.

Finally, psychological reactance has been manipulated in many ways, from the development of situations of lost freedoms in making choices between kitchen appliances (Brehm, 1966), to simply having students role-play situations where freedoms are lost in purchasing art work (Goldman & Wallis, 1979). For this study, the issue of creating psychological reactance from vignettes is important. Can psychological reactance occur from simply reading a narrative describing a situation? While no specific studies in which

vignettes were used have been located, many studies have measured psychological reactance to written scenarios designed to manipulate a person's perception of the level of his/her free behaviors. For instance, Jones & Brehm (1970) investigated psychological reactance by looking at the extent to which a written legal court cases, presented twice, with distinct directions on how to interpret the information was related to the creation of psychological reactance. The findings indicated that psychological reactance did occur in response to the written court cases. Likewise, psychological reactance to situations where freedom is not directly threatened has also been investigated. The general premise in these studies is that individuals do not have to be directly confronted with a loss of freedom, but a perception of implied loss can produce the psychological reactance effects (Brehm & Brehm, 1981). Therefore, it is expected that psychological reactance can be created by manipulation of narrative summaries of scenarios of control and freedom.

Teaching Style

When taking a class for the first time, students are often faced with teachers who adhere to philosophies that are incongruent with the way the students learn best. Some teachers may approach a particular class in a very relaxed and casual manner, while other teachers may be very structured and strict disciplinarians within the classroom. These distinctions represent philosophical differences in the purpose of education. While many philosophies of education exist, there are really four that can be used to categorize teaching in this country: mental discipline, behaviorism, cognitive field, and humanism (see Bull, 1995). Each provides the teacher with a set of underlying beliefs about what

should and should not be done within the classroom, how to approach instruction, and how to deal with classroom management (see Appendix A for an overview).

Mental disciplinists believe that learners need structure and control to learn. Without structure and control, the mind is left to its own devices, which will not be of worth to society as a whole. "Spare the rod, spoil the child" best sums up the mental discipline philosophy. Therefore, the mental discipline classroom is set up to control the student and to strengthen his/her mental prowess.

Behaviorism, as a philosophy of learning, emphasizes the reactive nature of the student and focuses upon the reinforcement of appropriate learning and the elimination, via extinction and negative reinforcement, of unwanted behaviors. Classrooms are set up so teachers provide linear sequential curricula, such as that found in programmed instruction, and outcomes-based education. Teachers serve as behavior shapers and instructional engineers.

The cognitive field philosophy emphasizes the student as a problem solver, one who is curious and seeks answers to questions. This classroom provides interaction between student and teacher, and while most/some of the curricula is teacher-selected, negotiation is an important part of the learning environment.

Diametrically opposite to mental discipline is the philosophy of humanism. Humanistic philosophy expects that students are motivated to grow and to develop in a positive and healthy manner. Educators who follow this philosophy nurture students and facilitate learning opportunities so those students will reach their greatest potential. Imagine the student as a seed and the teacher as a gardener. The role of the teacher is to

provide that seed with the optimum learning environment so that the seed can realize its potential.

From these simple accounts one can see that the classrooms of teachers following these philosophies will be different. For the purposes of this paper, it is expected that these teaching styles will affect a student's level of reactance when the style is not congruent with the student's learning style. Students who have a high need for self-independence, exploration, and learning will experience reactance when faced with a teacher who adheres to a mental discipline philosophy. Freedom will be questioned. Those same students should be well suited to the cognitive field or humanistic teaching style. For this research it is expected that students who are interactive but are in the "mental discipline classroom" will manifest psychological reactance the most readily.

Now let's consider the student with a high need for structure and control. He or she will perform optimally in the mental discipline and behaviorism environment, and have difficulty benefiting from instruction in a cognitive field or humanistic environment. Control is accepted and helps provide a foundation for the student. Within the humanistic environment and perhaps the cognitive field setting, the student is at a loss as to how to proceed. Students who seek structured environments are difficult to incorporate into the psychological reactance theory, as the challenge to control and freedom is not necessarily valued in these students. However, it would be expected that psychological reactance may once again be more likely in the mental disciplinists' classroom, where control and freedom are an issue. Research in this area will illuminate these possible scenarios and help clarify this interaction.

Another, and perhaps more relevant, conception of teaching styles comes from Reinsmith (1992). In this theoretical model, Reinsmith describes teaching as a continuum from strictly teacher-centered classrooms to strictly student-centered classrooms. This teaching style theory is more suited to the higher education arena and is of interest to this study. Reinsmith details eight forms of teaching and further divides them into five modes. The first form is the teacher as a disseminator/transmitter. This style of teaching is characterized by a purely teacher-centered environment. Students and teachers are distanced by the nature of the "objectivity" of the classroom environment. The teacher as a lecturer/dramatist is the second form. This style is characterized as being slightly more advanced. The teacher now has initiated contact with the student. The teacher not only lectures, but also performs. Still, the students are reduced to merely information receptacles. Both of these styles of teaching are characterized as presentational styles. Information is passed from teacher to student; these forms are extensively utilized in college classrooms today.

The third form of teaching style is the teacher as inducer/persuader. In this form, teachers are even more engaged with the students. They are more than mere performers on the stage, but they stand as motivation providers. These teachers subtly arouse curiosity and interest in students. Form four is teacher as inquirer/catalyst. Teachers are engaged directly with the student, and a bond is established that allows the teacher to be more than a superficial character in students' lives. Students take charge of their learning in this form. Forms 3 and 4 are called the initiatory mode in that teachers provide a framework for students' interaction and involvement in the classroom.

Form 5 is called teacher as dialogist and is by itself considered the third mode of teaching. This is a discussion-oriented presentational style. The teacher takes less of a role than in previous forms, and yet is adept at conversing as a means to an end. Form 6 is the teacher as a facilitator/guide. The teacher in this classroom takes on the Socratic method in that students pursue their own learning with the teacher's continual probing and prompting. The student is at the center of the learning process. Form 7 sees the teacher as a witness/abiding presence to the learning process. The teacher's role is minimal at best and the students are set upon the path of the quest for knowledge. The teacher identifies with the student as a learner, yet allows the student to proceed on his or her own. Forms 6 and 7 are termed the elicitive mode in that the teacher is bonded with the students and takes the position of helper in the learning process. Interaction among members is at a higher level than in the previous modes.

Finally, form 8 posits the teacher as learner and is also called the apophatic mode. In this style, teachers do not try to directly effect student learning. The teacher takes a similar role as the student and approaches learning as a dual activity. The teacher seeks to understand as much as the student. Together they seek to uncover new knowledge.

The preceding continuum has several relevant connections to psychological reactance. First, is the move from a purely teacher-centered environment to a more student-centered environment. Control and freedom are bound to be challenged most readily on both ends of the continuum, with students in the classes in the middle of the continuum perhaps being less challenged in terms of control and freedom. Second, the teacher-student encounter moves from nonexistent at one end of the continuum to

increasingly rich and deep at the other. By nature, psychological reactance will be elicited when threats to freedom are more formatted and structured. Likewise, it can be assumed that the other end of the continuum will produce psychological reactance when the teacher attempts exert control in an otherwise rule-free environment. What was once considered a freedom for the student now is threatened with elimination. So students should react in order to restore those lost of freedoms. Reinsmith brings up a third point, the fact that the different styles are appropriate in different disciplines. For instance, hard sciences are more conventionally taught in the presentational mode, whereas humanities may be better suited for the student-centered approaches. One final note about this continuum, Reinsmith has separated the teaching styles into three basic areas, the teacher-centered, the student-centered, and the middle-most dialogic classroom. In this study, the teacher-centered modes are separated out, as they are the most frequently used in traditional college classrooms. Forms 6, 7, & 8 (the elicitive and aphophatic modes) are collapsed into a single grouping called the student-centered mode because actual real-life examples of these styles are unfamiliar to most college students. Therefore, the overall breakdown in this study is the presentational mode, the intiatory mode, the dialogic mode, and the student-centered mode, which includes the facilitator/guide, witness/abiding presence, and teacher-as-learner forms. An overview of the characteristics of each is presented in Appendix B.

Learning Style

Students approach learning in different ways. While some students may prefer large class instruction, others will prefer smaller classes. Some students will perform

better when material is presented through auditory means rather than visually and *vice versa*. Some may be affected/influenced by the amount of structure. Previous research has investigated student motivation in line with Maslow's hierarchy of needs (Maslow, 1954). The idea is that students at different levels on the stairsteps are susceptible or not susceptible to particular learning environments. Finally, there is the notion that a student's style preference in learning can be categorized in terms of either extroversion or introversion (Eysenck, 1976). Students in the extroversion category would likely be more comfortable in a discussion oriented/interactive classroom, whereas an introverted student will likely be more comfortable in a classroom with more teacher-centered activity and little interaction. Obviously, individual differences can greatly impact a teacher's effectiveness and a student's performance in the classroom.

McCarthy (1980) summarizes several learning style theories, which include those of D. Kolb, C. Jung, A. Lotas, B. Fischer, A. Gregoric, E. Wetzig, and D. Merrill, as well as her own theory. Each theory is presented, according to McCarthy, by the way students align themselves on two different dimensions of learning: how they process information and how they perceive information. Perception is put on a continuum between concrete experience and abstract conceptualization. The processing dimension can be considered a continuum that spans from active experimentation to reflective observation. The measure of interest here is the Kolb Learning Style inventory. Kolb's instrument places students in one of four different quadrants that are delineated by the McCarthy matrix (See Appendix C). The learning style inventory begins by having students rank order 12 sets of four learning situations, which produces the four cognitive learning styles. These four factors are described as the accomodator (leaders, risk-takers, and achievers), the assimilator

(planners, theorists, and analysts), the diverger (creators, artists, sensors), and the converger (problem-solvers, deducers, and decision-makers).

The accomodator learning style students are in the concrete experience, active experimentation quadrant. These are the doers, those who adapt to the immediate circumstances, and these characteristics might be traits of people in the technical and practical fields such as business. The assimilator learning style describes students who have dominant abilities in the abstract conceptualization and reflective observation quadrant. They are theory driven, abstract, and less concerned with people interaction. The mathematical and basic science professions characterize them. The diverger student learning style describes students who fall in the reflective observation and concrete experience quadrant. These individuals are imaginative, brainstorming, and generators of ideas, and are most likely interested in people and more emotional than the other styles. They are characteristically found in the humanities and liberal arts areas. Finally, the converger learning style describes students in the active experimentation and abstract conceptualization quadrant. These students excel in the practical application of ideas, where there is only one solution, and typically prefer things to people. Engineers often exhibit this learning style. Perhaps the most promising feature of the learning style inventory is Kolb's application of the theory to the college student population (Kolb, 1981).

These four styles illustrate how the students best functions in the learning environment. It is expected that if a learning style is incongruent with a particular teaching style then reactance will be exhibited. It is expected that those learning styles characterized by a high need for structure will be better accommodated by a teaching

style with large amounts of order and control within the classroom. When faced with a less-structured classroom environment, these individuals will not perform as optimally. Likewise, students who need independence and exploration will exhibit reactance when their freedoms are challenged in the classroom, while they will perform optimally in the self-paced classroom.

Effects of Teaching Style and Learning Style Mismatches

So what can we expect when a teaching style and a learning style are incongruent? Grow (1991) describes a 4 x 4 grid that compares teaching style to learning stages. In this grid, there are sixteen possible combinations of teaching styles and learning stages. Six out of sixteen of the possible combinations are categorized as mismatches. Grow (1991) offers some possible consequences of these mismatches: rebellion, boredom, alienation, and general classroom conflict. Following this line of reasoning, it is expected that combinations of teaching styles and student learning styles will produce both matches and mismatches between student and teacher. Table I depicts the anticipated differences.

TABLE I

ANTICIPATED MATCHES AND MISMATCHES BETWEEN TEACHING STYLE AND LEARNING STYLE

	Presentational	Initiatory	Dialogic	Student-centered
Assimilator	Match	Match	Mismatch	Mismatch
Converger	Match	Match	Mismatch	Mismatch
Accomodator	Mismatch	Mismatch	Match	Match
Diverger	Mismatch	Mismatch	Match	Match

This hypothetical breakdown of the positive matches and mismatches is based upon the level of teacher control versus the student's learning style category. It is expected that those students in the assimilator group need the most structure, while those in the diverger group will tend to prefer more abstract/creative environments. Therefore, in line with the psychological reactance theory stated above, it is in the mismatches between teaching style and student learning style where the issue of control and freedom will manifest itself.

One possible consequence of psychological reactance in the classroom may be found in teacher effectiveness evaluations. These evaluations are designed to assess students' perceptions of the overall quality of their learning experiences in regard to such dimensions as organization, presentation, and workload. One possible manifestation of psychological reactance in the classroom would be in the form of a negative course evaluation. Marsh (1987) developed the Students' Evaluations of Educational Quality (SEEQ) instrument to assess students' perceptions of their classroom experiences

(Appendix D). The SEEQ provides a very generalizable instrument for assessing students' perceptions (Marsh 1992). It is valid across disciplines and over differing teaching styles. Therefore, it is used in this study to investigate the impact of teaching style and learning style incongruencies on teacher effectiveness evaluations, as well as the relationship of such incongruencies to psychological reactance.

Problem Statement

In recent years, educational psychologists have investigated the impact of teaching and learning styles upon student performance in the classroom (e.g., Grow, 1991). While these constructs have shed light on the importance of the teacher-student interaction, little attention has been given to the effects of this interaction, namely the student's reaction to the congruence or discongruence of teaching and learning styles.

What happens when a student is paired up with a teacher whose particular teaching style is at odds with that student's learning style? The problem addressed by this study revolves around students' psychological reactions to particular teaching styles. Students whose control and freedom is challenged within a given classroom will exhibit psychological reactance, and it is expected that these students will be motivated to restore that control.

Another problem to be addresssed is the differences in the extent to which students manifest psychological reactance. That is, are certain students more likely to be reactant than others based upon their learning style preferences? Students who have a high need for self-direction and hands-on learning may in fact be more prone to psychological reactance than those who are comfortable with structure and order in the

classroom. The question to be adressed here is whether student learning style affects psychological reactance.

It should be clear by now that each classroom environment is different. What is the implication of these differences? Or stated more specifically, what types of situations in the classroom are more likely to produce reactance? Therefore, one purpose of this study is to determine whether psychological reactance is more likely to manifest itself in classes that provide high structure and discipline than in classes that allow the students control over their learning. Do classrooms with a mental discipline or a behaviorism orientation produce more psychological reactance than classrooms with a field theory and humanistic orientation? Or do classrooms based on field theory and humanism produce more psychological reactance than classrooms based on mental discipline and behaviorism?

Finally, how will psychological reactance manifest itself in the students? This research focuses on the only mechanism for students to overtly show their displeasure with the classroom structure and format, the teacher effectiveness evaluations. Perhaps students who have high levels of psychological reactance have more negative ratings of the class than students who have low psychological reactance toward the class. Are these ratings due to the student's preference in learning style, to the teaching style, or to the interaction of teaching and learning style?

Research Hypotheses

What is the impact of conflicts between teaching styles and learning styles? The premise of this study is that psychological reactance will occur in students that are in

classes in which the teaching style does not match their learning styles. Additionally, it is expected that teacher effectiveness ratings, as measured by the revised Student Evaluation of Educational Quality scale, will be related to psychological reactance. Based upon the preceding theory, thirteen specific hypotheses will be addressed in this study. Each hypothesis is stated as the null.

HO_1: Students' levels of psychological reactance will be the same when presented vignettes portraying presentational, initiatory, dialogic, and student-centered classrooms.

HO_2: Students' levels of psychological reactance will be the same across all four learning styles.

HO_3: Students with accomodator learning styles will have the same level of psychological reactance for each of the four teaching style vignettes.

HO_4: Students with assimilator learning styles will have the same level of psychological reactance for each of the four teaching style vignettes.

HO_5: Students with converger learning styles will have the same level of psychological reactance for each of the four teaching style vignettes.

HO_6: Students with diverger learning styles will have the same level of psychological reactance for each of the four teaching style vignettes.

HO_7: Students' ratings of teacher effectiveness will be different from their level of psychological reactance.

HO_8: Students' ratings of teacher effectiveness will be the same when presented with vignettes portraying presentational, initiatory, dialogic, and student-centered classrooms.

HO_9: Students' ratings of teacher effectiveness will be the same for all four learning styles.

HO_{10}: Students with accomodator learning styles will rate the teacher effectiveness the same for each of the four teaching style vignettes.

HO_{11}: Students with assimilator learning styles will rate the teacher effectiveness the same for each of the four teaching style vignettes.

HO_{12}: Students with converger learning styles will rate the teacher effectiveness the same for each of the four teaching style vignettes.

HO_{13}: Students with diverger learning styles will rate the teacher effectiveness the same for each of the four teaching style vignettes.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This chapter is organized in the following manner. First the literature concerning psychological reactance will be addressed. This section will be followed by a review of the literature concerning teaching style. The concept of teaching style is modeled after Reinsmith's (1992) description of a teaching continuum, from teacher-centered classrooms to student-centered classrooms. Literature is reviewed that leads to this operational definition of teaching style. Then learning style will be examined. Learning style is defined as a student's personal preference for learning (Kolb, 1981). Literature leading up to this operational definition is reviewed. The chapter will finish with a review of literature concerning the interaction of teaching style and learning style. Possible consequences pertinent to the teaching style and learning style interaction in relation to psychological reactance will also be addressed. The literature of teacher evaluations will be reviewed. A final connection to the hypotheses of this study is provided at the end of the chapter.

Psychological Reactance

Most simply, psychological reactance is considered a counterforce to restore a loss or perceived loss of freedom (Brehm, 1966). The notion is that one will experience

some level of motivation to restore freedom that is lost or percieved to be lost. Brehm (1966) succinctly sets the groundwork for the theory of psychological reactance by stating,

> Psychological reactance is conceived as a motivational state directed toward the reestablishment of free behaviors which have been eliminated or threatened with elimination. Generally, then, a person who experiences reactance will be motivated to attempt to regain the lost or threatened freedoms by whatever methods are available and appropriate. (p. 9)

The theory is based upon free behaviors where behaviors are defined as "any conceivable act" and "free" is defined to the extent to which "the individual must have the relevant physical and psychological abilities to engage in them" (p. 4). The magnitude of the psychological reactance effect is based upon, 1) the importance of the free behavior, 2) the proportion of free behaviors eliminated, and 3) the magnitude of the threat. Much of the early psychological reactance literature suggests that the results of psychological reactance fall within a context of antisocial or uncivilized behavior. Brehm & Brehm (1981) expanded the fundamental assumptions of the earlier theory of psychological reactance. Psychological reactance is seen as a motivational state of resisting social influence. Free behaviors are those in which the individual has a choice; that is, the individual is competent to exercise the freedom.

More recently, Brehm (1993) describes reactance in terms of control motivation. Control is defined as the perception that one can influence events. When control motivation is lost or decreased, the state that follows is analogous to psychological reactance. That is, if one has lost the ability to get to work because of a flat tire, then the control over the situation has been decreased, thereby eliciting psychological reactance

and/or control motivation. In this revision of his original theory, Brehm (1993) refines the major assumptions that influence psychological reactance:

1) the number of freedoms threatened
2) the proportion of freedoms threatened
3) the importance of the freedoms
4) the number of freedoms threatened by implication
5) the magnitude of the reactance as an inverse function of direct or implied restoration of freedom
6) the attractiveness of alternatives is related directly to the magnitude of reactance
7) the attractiveness of forced choice is inverse to the magnitude of reactance
8) the tendency to exercise threatened freedom is a function of the magnitude of reactance.

Wortman & Brehm (1975) describe an integrative model of psychological reactance and learned helplessness. This study provides a good overview of these two theories. The authors posit that the loss of control leads individuals to react in an aggressive, hostile manner and increases the desire to restore losses of freedom. Learned helplessness, on the other hand, predicts that losses of control are followed by passivity. They incorporate these two theories into an integrated model so that, as the expectation for control increases, so does the motivation to exert control. This model serves to influence either psychological reactance on one hand or learned helplessness on the other. Low motivation and low levels of control lead to learned helplessness, whereas high motivation and the expectation of control lead to psychological reactance. Indeed Brehm

(1993) states that learned helplessness is characteristically different from reactance in that learned helplessness is the behavior of giving up the freedom altogether, while reactance still places a value on the lost freedom. Support comes from Brockner, Gardner, Bierman, Mahan, Thomas, Weiss, Winters, & Mitchell (1983), who extended the Wortman and Brehm (1975) integrated model of psychological reactance and learned helplessness. These authors conclude that small amounts of personal failure produce psychological reactance and large amounts of psychological reactance in turn produce learned helplessness.

So how does psychological reactance relate to personality? Specifically, how do self-esteem, self-consciousness, and disposition relate to the theory of reactance? Brockner et al. (1983) provides empirical evidence that both self-esteem and self-consciousness moderate the reactance-helplessness model. High self-consciousness led to more reactance than low self-consciousness. Individuals with low self-esteem performed marginally better at small failure conditions than did individuals with high self-esteem, but significantly worse in the high failure condition. In an extension of the research on self-esteem, Brockner and Elkind (1985) conducted two experiments on reactance and self esteem in the areas of achievement and persuasion. They found a positive effect between psychological reactance and self-esteem in the persuasion context, suggesting that the degree of the threat to freedom moderates the relationship with self-esteem. High threat creates more reactance in individuals with high self-esteem than in individuals with low self-esteem. Relationships between self-esteem and psychological reactance were found in achievement persuasion as well. The implications for motivating workers are discussed. Joubert (1990) has investigated the impact of self-esteem and other

personality variables upon psychological reactance. Loneliness was correlated with psychological reactance for both men and women. Reactance was correlated with self-esteem (negatively), fear of failure, and happiness (negatively) for women, whereas men showed a significant relationship between psychological reactance, happiness, and conventional mores (negative relationship). Hellman & McMillin (1997) further investigated psychological reactance and self-esteem. Their research specifically deals with Hong's scale of psychological reactance and the suppressing effect of the behavioral freedom factor on the relationship between self-esteem and the freedom of choice factor. The authors warn users of the Hong scale not to interpret the scale as a multidimensional representation of psychological reactance.

Carver and Scheir (1981) investigated the role of self-consciousness on psychological reactance. Their findings suggest that one's propensity for private self-consciousness (an internalized self-awareness) is a moderating variable for psychological reactance. Those high in private self-consciousness were more likely to display reactance than those low in private self-consciousness. However, public self-consciousness (a social awareness) was not a moderating effect in the study, which led to another study that did show an effect. Because of the conflicting results, the authors suggest further investigation into the effects of social awareness on psychological reactance. Their study used a procedure in which subjects read descriptions of political candidates' opinions about the legalizing of marijuana. Reactance was manipulated by controlling this paradigm.

Brockner and Elkind (1985) discuss the situational/dispositional debate in the psychological reactance literature, and advise caution in determining the source of

psychological reactance. Researchers (Mulry, Fleming & Gottschalk, 1994) allude to a physiological, rather than a purely cognitive, basis of psychological reactance. Trait reactance does not differentially affect treatment outcomes, contrary to the paradoxical theory. Situationally induced reactance does generalize to unrelated situations. The implications are discussed in terms of cautioning clinicians who might use manipulations of reactance to motivate clients. Dowd, Hughes, Rockbank, Halpain, Seibel & Seibel (1988) reveal that reactance and paradoxical treatments are useful in clinical applications. Paradoxical treatments can be either of a compliance or defiance approach. Dowd et al. again suggest that reactance can be situational and/or individually based (see Brehm & Brehm, 1981). They show that high-reactant subjects were not satisfied with procrastination and expected to change less. The support for these tendencies was low at best. Kelly and Nauta (1997) indicated that psychological reactance, and more specifically dispositional reactance, moderates the effects of thought suppression. Those with high levels of psychological reactance, when asked to suppress thoughts generally felt more out of control and disturbed by unwanted thoughts. For those in the expression group who were low in psychological reactance, the effects were loss of control and intrusive thought patterns. According to the authors, these findings indicate that the need to restore freedom can inhibit the thought suppression technique.

Gender and Age Effects

According to Hong, Gannakopoulos, Laing, & Williams (1993), there are age and gender interaction effects with psychological reactance. This finding suggests that as people age, males and females differ in their rates of reactance. Specifically, gender by itself was not significantly related to psychological reactance. However, age was

inversely related, so that the older one was, the lower the level of psychological reactance. In another study, Hong and Giannaopoulos (1994) looked at 1749 adult Australians between ages 17 and 40. In this study they investigated self-esteem, depression, locus of control, trait anger, religiosity, age, and psychological reactance in relation to life satisfaction. The results indicate that psychological reactance was not related to life satisfaction.

Frank, Jackson-Walker, Marks, Van Egeren, Loop, and Olson (1998) attempted to assess reactance and measures from the MMPI for early adolescents and middle adolescents. The results provide evidence of the convergent and divergent validity of the Therapeutic Reactance Scale-A (Frank, Van Egeren, and Poorman, 1993). Likewise, reactance was shown to be related to oppositional, nonaffiation, and narcissistic traits in adolescents. Some differences were found between early and middle adolescents in the areas of aggression, mood, and substance abuse. Some evidence is given for gender differences. Of interest is the conclusion that "being psychologically reactant ain't all bad" (Frank et al., 1998, p. 376)!

Application of Psychological Reactance Theory

Mulry, Fleming & Gottschalk (1994) looked at reactance (relevant vs. not relevant; high reactance vs. low reactance) and treatment for procrastination (self vs. paradoxical). The results indicate that short-term paradoxical and self-control treatments are similarly effective in improving study time. These results suggest that high reactance is not effected by paradoxical and self-control treatments. The relevance of reactance manipulation did not influence treatment outcome. Carter & Kelly (1997) have combined

psychological reactance, paradoxical therapeutic techniques, and sport psychology. In this study, subjects were asked to compete in a free throw contest. Measures of anxiety were obtained, and subjects were assigned to a traditional compliance-based imagery condition, paradoxical defiance-based imagery condition or a control group. The authors expected that psychological reactance would moderate imagery conditions and free-throw shooting performance. Partial support for this hypothesis was obtained. In conclusion, the authors suggested that care be taken when prescribing paradoxical techniques for low-reactance athletes. They further suggest that the area of paradoxical treatments be investigated more extensively in the athlete population. Furthermore, athletes who are prone to high levels of psychological reactance are probably better suited to a "hands off" approach than to any treatment whatsoever.

In an effort to caution against its overuse as a paradoxical treatment, Hunsly (1997) opposes the view that defiance-based treatments lead to better results with clients. In this review, the author concludes that even in those cases where clients exhibit psychological reactant tendencies, therapists refrain from using the paradoxical treatments proposed in other studies. Further investigation is called for.

Baum, Fleming, & Reddy (1986) investigated unemployment stress and the relationship to both helplessness and reactance. They demonstrated that unemployment length is related to the build-up of higher levels of physiological stress. This study suggests that reactance occurs in the beginning of a period of unemployment and is followed by learned helplessness.

Puddifoot (1997) has examined the extent to which communities are impacted by the erasure of their boundaries. The author suggests that reaction to this loss of physical

space may manifest itself in one of three ways. The first involves the transference of allegiance to the out-group. The second reaction would be to alter the status of the first group. And finally, the out-group would simply accept their lowered status in relation to the in-group. Of consequence to psychological reactance theory are the group reactions to losses of freedom and control.

Mullin, Imrich, & Linz (1996) demonstrated that, like the Jones & Brehm (1971) study, there can be legal considerations when providing information to jurors. In this study, subjects were given pretrial publicity that was either a high- or low-manipulated sexual predatory scenario unflattering to the defendants. It was found that male subjects tended to regard the case as "not open and shut" when freedom of choice was manipulated by the pretrial publicity.

Goldman, Pulcher,and Mendez (1983) investigated the effects of appeals for help and psychological reactance. Using a classic social psychology paradigm, telephone requests for help were made in a demanding versus a non-demanding condition. Subjects who responded to the request for help by calling the designated telephone number were categorized as exhibiting prosocial behavior. The results indicated that appeals for help that were direct were the most effective, while indecisiveness led to lower rates of helping. Reactance theory was minimally demonstrated in that appeals that were direct, but less demanding yielded the most calls. In a similar vein Snyder and Wicklund (1976) looked at the tendency for persuasion to be thwarted by psychological reactance effects. These findings suggest that the more one initially agrees with a position, the less likely it is that reactance will occur. Additionally, the subjects' level of psychological reactance was eliminated by having them commit to a position prior to the persuasion attempt. This

suggests that one's tendencies before a communication of persuasion will determine whether or nor reactance will be elicited. If one is leaning in one direction prior to a persuasive argument, the elimination of freedoms not associated with the original position will not produce reactance.

Ringold (1988) applied psychological reactance theory to understanding the new coke/ original coke marketing debacle of the 1980's. Taste tests were designed to indicate that indeed psychological reactance had occurred in that consumers had felt that freedom to choose the original coke was eliminated altogether. An alternative strategy was proposed that would minimize the reactance effects. Offering a choice rather that a substitute and then a gradual elimination of the original was deemed the best approach for marketers.

Krcmar and Cantor (1997) investigated parent-child interactions regarding the advisory/ratings for television programming. They suggested that psychological reactance would result from the restrictive nature of these television advisories. Evidence supported the author's hypothesis.

Van Dijk and Van Knippenberg (1997) explored the trading phenomenon of loss aversion, specifically in wine trading. Their basic idea was that gains are not as heavily weighted, as are losses. They suggest ways to help people to maintain a sense of freedom when trading consumer goods.

Hughes and Falk (1981) incorporate psychological reactance into the school psychologists' consultation arena. They describe the use of reactance with clients who are resistant to their consultations. Parish & Parish (1991) provide a general discussion of learning theory and how it can backfire for educators. They suggest that educators

consider the effects of psychological reactance when dealing with conditioning techniques in the classroom and avoid a boss-adversary situation so that psychological reactance is not created. Nimmer & Handelsman (1992) predicted that attitudes toward psychology would be positive when students were free to decide whether or not to participate in psychology research. They expected negative attitudes when students were forced to participate. Mild support was provided for the hypothesis in this quasi-experimental study.

Measurement Considerations

Grabitz-Gniech (1971) raises some interesting problems concerning the measurement and the theoretical base of psychological reactance. The author predicted that psychological reactance would be undermined by social norm pressure and individual feelings of inadequacy. The author supported the idea that social situations can diminish the expected reactions to lost freedoms. A marginal finding supporting the concept of individual inadequacy was demonstrated.

Tucker & Byers (1987) created the first English version of a psychological reactance scale. This was an initial attempt at validation and reliability of a psychometric tool for psychological reactance. They revised the German Merz psychological reactance scale into an 18-item 2-factor scale that accounted for 12% of the variance. The 2 factors were named "behavioral freedom" and "freedom of choice." Their conclusion was that the scale at that time was psychometrically unacceptable.

Dowd, Milne & Wise (1991) describe their efforts to construct a Therapeutic Reactance Scale. In this good overview of the theory of psychological reactance, they describe reactance as an individual construct rather than entirely situational in nature.

They describe Brehm's (1966) theory that reactance is a function of 1) the importance of the free behaviors, 2) the expectation of freedom, 3) the magnitude of the threat, and 4) the threat to other freedoms. They discuss the idea that individuals have a reactance potential or tendency to be oppositional. The authors provide some discussion of Brehm and Brehm's notion of the effects of Type A and Type B personalities and reactance. They modified the scale from 112 items to a final 28-item scale with 2 factors that account for 26% of the variance. Evidence for convergent, divergent and construct validity is described. Additionally, there is tentative evidence that reactance potential exists at the individual level. The authors suggest that this scale be used as a unidimensional construct. Dowd & Wallbrown (1993) use the Therapeutic Reactance Scale (TRS) and the Questionnaire for Measuring Psychological Reactance Scale (QMPRS) to investigate the motivational components of psychological reactance. The results portray psychological reactant individuals as aggressive, defensive, quick to take offense, autonomous, isolated, neither supported nor receiving support, seeing themselves less favorably than others see them, dominant, individualistic, loners, and having poor quality relationships with others. The authors suggest that the TRS is more valid and reliable than the QMPRS. They also suggest that psychological reactance is both situational and individual.

Hong & Page (1989) developed the original Hong scale of psychological reactance. This scale was revised from the German Merz scale and the revised Tucker and Byers scale. The Hong 18-item scale was reduced to a 14-item version. This was validated upon 257 students. Four factors emerged accounting for 53% of the variance. These factors were freedom of choice, conformity reactance, behavioral freedom, and

resistance to advice. Hong (1992) conducted a validation study on the original 14-item scale. This time 462 subjects were selected from the general public in an Australian city. The 14-item scale still consists of four factors: freedom of choice, 27%; conformity reactance, 13%; advice and recommendations, 8%; and behavioral freedom 8%. Hong suggests a multidimensional scale. Hong & Faedda (1996) conducted a validation study that refines the 14-item Hong scale to an 11-item version. Subjects were 3,085 Australians (both college students and noncollege). This study also investigated convergent and discriminant validity with locus of control, self-esteem, trait anger, depression, life satisfaction, and religiosity. Statistical analysis used SPSSX with a principle components varimax rotation and the PA oblique rotations. A revised factor structure emerged with the elimination of items 4, 10, & 14 from the original 14-item scale. Factor 1 is called "emotional response toward restricted choice" and contains items 6, 7, and 8 (30% variance explained). Factor 2 is called "reactance to compliance" and contains items 1, 2, & 3 (14% variance explained). Factor 3 is called "resisting influence from others" and contains items 11, 12, and 13 (9% of the variance explained). Factor 4 is called "reactance toward advice and recommendations" and contains items 5 and 9 (8% variance explained). This 11-item scale accounts for 61% of the variance. Trait anger and depression were found to be positively correlated with the 11-item scale. Self-esteem and locus of control were not correlated to the revised scale. Finally, life satisfaction and religiosity were mildly negatively related to the revised scale. The subscales were all significant except for factor 1 with life satisfaction and factor 3 with life satisfaction and religiosity. The dimensional approach is supported by this study.

Teaching Style

Much of the study of teaching style focuses upon learning philosophy. It is generally assumed that a learning philosophy manifests itself in the classroom teaching style. Therefore, a brief overview of learning philosophy is followed by the connection between learning philosophy and teaching style as conceived by Reinsmith (1992) which was used in this research.

Reinsmith (1997) states,

> Researchers have found that teacher talk often takes up 4/5ths of classroom time. We often say we need to talk in order to create a structure for teaching. But I say that sooner or later a teacher must come near, stand next to, crouch down beside students, for we are not merely voices in a wilderness of uniformed minds, we are whole beings, minds carried about in bodies. (p. 1)

Grasha (1994) details the various teaching styles found in higher education arenas. There are four primary clusters of teaching styles that blend to form the typical characteristics needed in most teaching instances. Cluster 1 is a combination of expert and formal authority styles. Cluster 2 is comprised of the expert, personal model, and formal authority styles. Cluster 3 is characterized by the expert, facilitator and personal model styles. Finally, cluster 4 is the expert, facilitator, and delegator styles. The overlap and layering of these styles accounts for the variety of teaching styles found through the academic disciplines. An analysis of these teaching styles indicates that the faculty rank of professor is related to a more expert and formal authority orientation. Facilitator and delegator styles were more prevalent in advanced classes.

Reinsmith (1992) provides the rationale behind his teaching style continuum. Teaching involves encounters with students, so he describes teaching styles as a series of

forms of these encounters. The forms constitute a continuum of teaching styles that move from a teacher-centered orientation to a student-centered orientation. A further breakdown yields five distinct modes of teaching. Mode 1 is called the presentational style and is highly teacher-centered. The teacher is seen as a disseminator and transmitter of information. Additionally, the teacher is a lecturer and dramatist. In mode 2, called the initiatory style, the teacher has less control over the class. This style includes inducers, persuaders, catalysts, and inquirers. The interaction between teacher and student is more pronounced than in mode 1. Mode 3 is the dialogic mode. Teachers are more engaged with the learner. The interaction is more balanced, as the teacher and student are equally involved. Mode 4 is called the elicitive style. Now the student is at the center of the class instruction. The teachers move from a facilitator or guide orientation to a witness or abiding presence. Students take the learning impetus upon themselves. Mode 5, called the aphophatic style, is characterized by the teacher's becoming learners. As can be seen, the implication is that in higher education, all styles can be used in the education process.

Kaplan and Kies (1995) discuss the need for college education programs to prepare future teachers in understanding not only their teaching styles, but also the diversity of possible learning styles. The authors provide an overview of the teaching style concerns such as the role of the teacher, the instructional strategies and the awareness of learning style. They emphasize the Gregorc (1975) model of learning style, which characterizes learners as concrete-sequential, concrete-random, abstract-sequential, and abstract-random learners.

Learning Style

Brookfield (1986) describes 6 principles for facilitating adult learning: voluntary participation, mutual respect, a collaborative spirit, action and reflection, critical reflections, and self-direction. Sadler-Smith (1997) combines pieces of the learning style similarities across theoretical orientations for conceptual clarity. The author reviews the current approaches to learning style: 1) cognitive personality elements, 2) an information processing style and 3) an instructional preference style. Kolb's Learning Style Inventory is presented as an information processing style and some of the criticisms concerning its low reliability and validity are discussed.

From the Career Assessment Resource Guide (1986) an overview of learning styles and provide some commonly asked questions for review. Brief descriptions of learning style areas ranging from Dunn and Dunn's (1978) visual, auditory, tactile, and multisensory learning styles to the more environmentally based factors that influence learning like light, sound, temperature are presented. Information about the instruments used in assessing learning style is provided. Teaching style inventories such as the Instructional Style Inventory and methods for creating teaching style checklists are mentioned. Barron (1997) calls for a move away from the lecture, text, and test method of education and into a further exploration of individual learning style. A brief summary of the Meyers-Briggs Type Indicator, the Keirsey Temperament Sorter, and McCarthy's 4-mat system are described and recommended as avenues for further research.

McCarthy (1981) gives a thorough outline of the various learning style models. This accumulation of theories is integrated into what the author calls the 4-mat system. Learning, she says, can be conceptualized as having four styles that are variations of the

concrete-experience to abstract-conceptualization and the active-experimentation to reflective-observation dimensions. The author collapses the theories of Kolb, Lotas, Jung, Fischer, Gregorc, Wetzig, and Merrill into four distinct learning styles. Style one is the innovative learner, who exhibits a need for meaning, involvement, and imagination. Style two is the analytic learner, who seeks facts and ideas, and prefers to create models and concepts. Style three is the common-sense learner, who seeks usability and knowledge of how things work, as well as the practical application of ideas. Style four is the dynamic learner, who seeks the hidden possibilities, self-discovery, action, and to carry out the plans.

Kolb Learning Style Inventory

Kolb's (1981) experiential model of learning style is based on a Lewinian conception and the importance of experience in the learning process. Cognitive style yields the following four learning styles: converger, diverger, assimilator, and accommodator. The learning styles are shown to cluster according to undergraduate major. This clustering is described in terms of the underlying philosophical positions of the major academic positions. The implication is that through "the examination of the matches and mismatches between student learning styles and departmental learning demands the typology helps to explain variations in academic performance and adaptation to the university" (p. 248). Kolb (1984) urges an integrative structuring of higher education: "Thus the structured model of learning can be likened to a musical instrument and the process of learning to a musical score that depicts a succession and combination of notes played on the instrument over time. The melodies and themes of a single score form distinctive individual patterns that we will call learning styles" (p. 62).

The original Learning Style Inventory is based upon a state approach and contextualism; hence it is experiential in quality. Nine items were designed to measure concrete experience (feeling), reflective observation (watching), abstract conceptualization (thinking), and active experimentation (doing). "Learning styles are conceived not as fixed personality traits but as possibility-processing structures resulting from unique individual programming of the basic but flexible structure of human learning" (p. 95). Validation of the theory with Jung is discussed.

Warren (1997) profiles student participation in a supplemental instruction program using the Kolb Learning Style Inventory. The total sample distribution for learning style showed that 38% were assimilators, 27% were convergers, 18% were accomodators, and 17% were divergers. The author reports that science majors were mainly assimilators and convergers, while nonscience majors were fairly evenly distributed across learning styles. Some gender differences were noted for the assimilators (36.1% female; 45.9% male), the divergers (18.1% female; 13.5% male), and the convergers (29.2% female; 24.3% male). For the ethnicity variable the Caucasian group contained primarily assimilators and accomodators. The African American, Hispanic and Asian groups were mainly comprised of assimilators.

Simms, Veres, Watson, & Buckner (1986) compared the versions of the Learning Style Inventory (LSI). They described the deficiencies in the original LSI and noted the improved format and simplified scoring system of the LSI-II. The subscale internal consistency increased somewhat with the new version, using a sample of 181 students (compared to 438 students measured with the original LSI). Test-retest reliability remained low for both versions of the instrument. They suggested that the improvement

in internal consistency is due to response sets and not to any further changes in learning style characteristics.

Ruble and Stout (1991) analyzed reliability and classification stability for the original Kolb LSI and for a scrambled item version. Past research indicated a column response set with the LSI. Ruble and Stout's results indicate some problems with response sets, but all differences are considered moderate at best.

Sein and Robey (1991) report that learning style as measured by the Kolb LSI has an effect on the instruction process in the area of computer training. Converger groups scored better in measures of accuracy in computer training than other learning styles. Further interpretations reveal the value of instructional design to account for individual differences in learning.

Holley and Jenkins (1993) investigated the question-type format for accounting course exams in relation to learning style. The results indicated that learning style was affected by all testing formats except the multiple-choice quantitative questions. The authors suggest that for accounting studies, it is useful to provide all formats of exams to help students perform successfully in accounting.

Cravener and Michael (1998) provide an excellent overview of learning style in their investigation of face-to-face vs. computer-mediated communications. Evidence that some students will be more likely to communicate effectively in a computer-mediated format than in the face-to-face environment is presented. Carl Rogers (1969) stated, "Significant learning takes place when the subject is perceived by the student as having relevance for his own purposes," (p.158). Where one student sees threat, the others see challenge and when threat is lowered, learning can take place (Rogers, 1969, p. 159).

Grow's (1991, 1994) model of teaching and learning style is comprised of 1) dependent learners who need an expert at the helm, 2) interested learners who need a guide, 3) involved learners who need a facilitator, and 4) self-directed learners who need a consultant. These distinctions are based upon a dependent-independent continuum. Pascaralla and Terenzine (1991) show that students low in independence, internal motivation, flexibility, and achievement perform better in teacher-directed and structured classrooms.

Kruzich, Friesen, and Van Soest (1986) look at both faculty and student learning styles in a social-work academic environment. In this exploratory investigation, a difference was found between faculty in the classroom and field instructors. Graduate students and undergraduates differed as well. Learning Style Inventory scores were related to preference for teaching methods and the resulting mismatch was related to communication problems and learning blocks. Errors in judgments of performance can be made when learning style/teaching style are mismatched rather than when performance is emphasized. The Learning Style Inventory is seen as a useful tool for both student and faculty.

Pillay (1998) investigated cognitive learning styles and instructional material that either matched the cognitive style or was incongruent with that style. This quasiexperimental design was based upon the notion that "individuals who contrasted with instruction and was incongruent with their cognitive style experience great difficulty in comprehending the information" (p. 173). The results indicated that the match or mismatch of cognitive style and computer-based instruction yielded no differences on the total scores, but the trend was toward the hypothesized direction. Additionally, time to

complete tasks was found to be different as well. Learning styles were found to be different in terms of performance on the tasks.

Linking Teaching and Learning Style

Schenstead (1997) in his review of motivation and adult learning, cites Smith and Renzulli (1984) who make the point that some educators believe that there is superior learning when teacher's style matches students learning style.

Philbin, Meier, Huffman, and Bouerie (1995) demonstrated that males were more inclined to benefit from a traditional educational style, while females learning styles were more likely to be stymied by the traditional education approach. Marked differences were found in the Diverger (29% female; 8% male) and assimilator groups (20% female; 48% male).

Severions and Ten Dam (1994) conducted a meta-analysis to ascertain the gender differences of the Learning Style Inventory. Only the abstract conceptualization scale yielded significant gender differences. The abstract conceptualization dimension influences both the converger and assimilator learning styles.

Hayes and Allinson (1993) approach learning style from the $B=f(P \cap E)$ framework. The matching hypothesis posits that learning style and instructional style yield the best results when they are congruent. In a review of several related studies, some mild support is provided for this position.

Schoeder (1988) described the college student and faculty characteristics on the Meyers Briggs Type Indicator. College students are described as sensing types with a need for structure, certainty, clarity, and the rationality behind assignments. Faculty, on

the other hand, prefer the intuition approach to learning. The presentation of information is typically in a reflective and abstract form. The implications of this study reveal a more favorable atmosphere for learning for the smaller group of students whose types are similar to the faculty.

According to Mark and Menson (1982), there are some obvious matches and mismatches between adult learners and academic disciplines. This research alludes to the notion that some learning styles are better suited to particular disciplines and fields of study. Further insight into adult development and portfolio assessment indicates that the Kolb LSI has practical value as a teaching tool. Of particular interest is the notion that university education begins at the concrete experience level and moves from reflective observation to abstract conceptualization. The active experimentation stage is thought to occur upon graduation, in the work force. A second area of interest is that the utility of the model lends itself toward faculty understanding of learners. And third, students who do not pursue specific paths of education are able to restructure their academic lives.

Stewart and Miller (1991) investigated discongruencies and congruencies between learning style and teaching style in regard to course and instructor evaluations. Additionally, grades for these courses were obtained. Subjects were business faculty and students. The characteristics of this sample were found to be similar to previous descriptions of college students in regard to learning styles. Students tended to fall into a sensing style as defined by the Meyers Briggs Type Indicator (MBTI). This style is characterized by a need for structured, concrete, and linear types of learning experiences. Faculty scores on the MBTI demonstrated an intuition preference, where reflection and abstract views are valued. The results of this study indicate that both course and teacher

evaluations are impacted by the discongruencies of student and teacher learning styles. The students' grades for these discongruent styles were not significant.

Kalskeck (1989) reports that the effects of incongruent teaching style and learning style are not found in upperclassmen.

Grow (1991) also proposes that there are teaching style and learning matches and mismatches. In his model, learners form a continuum from dependent learners to self-directed learners. Instruction ranges from teachers as being authorities to being delegators. Within this matrix there are matches between some combinations (i.e., dependent students and authority teachers or self-directed students and delegator teachers) as well as mismatches (i.e., self-directed student and authority teachers or dependent students and delegator teachers). The implications of these interactions suggest in each instance, teacher skills can alleviate classroom tension.

Teacher Effectiveness Evaluations

Marsh (1992) looked at teacher evaluations using the Students Evaluation of Educational Quality (SEEQ) instrument over a 13-year period. The generalizability of the SEEQ is strongly supported and a consistent 9-factor structure is evident. The results suggest that the SEEQ factor structure is generalizable across academic disciplines and teaching levels. Caution is suggested when looking at higher-order factor structure. Marsh (1987) investigated the reliability, stability, and generalizability of student evaluations using the Student Evaluation of Educational Quality instrument. One finding was that instructors themselves were more instrumental in student evaluations than were the courses they taught. It is the instructors themselves, regardless of the courses taught, that determines the student evaluation. One indication concerning individual reports of

class effectiveness versus class average evaluations is that some instructors may be more effective with particular types of students, the implications of which would suggest that department chairs can make informed assignments based upon this information. A further note by the author suggests that a multidimensional approach to the evaluation of instructional evaluation is important. There are indications that certain teachers have profiles for effectiveness in differing areas of the SEEQ.

Feldman (1996) has attempted to identify the characteristics of exemplary teaching. In this review, the author asserts that teacher effectiveness is a multidimensional construct. Twenty-four instructional dimensions were correlated with both student achievement and overall evaluations. These results suggest that teacher preparation, course organization, clarity, understandableness, stimulation of student interests, and students' perception of outcomes are the most important. Elocutionary skill, clarity of objectives/requirements, subject knowledge, and enthusiasm are moderately important. Additional research sheds light on the fact that many myths are associated with teacher evaluations (i.e., that they are popularity contests, students are too immature to provide quality assessment). Some evidence suggests that variables such as the size of the class, course level, instructor rank, whether or not the class is required or an elective, and whether or not it is the student's major affect the evaluation of the teacher. Findings suggest that student grades and academic discipline are moderately related to teacher evaluations.

Summary and Connection to Problem

Obviously, there is considerable research concerning psychological reactance. Research has demonstrated a solid theoretical foundation for the theory, as well as a plethora of applications for the theory. For the purposes of this research study, it is necessary to relate the theory of psychological reactance to the teaching style and learning style literature. Teaching style is found to be a continuum from student-centered to student-centered. Learning style as defined by Kolb (1984) indicates two dimensions that yield four distinct learning styles based upon a student's experiences. Research has indicated that matches and mismatches of teaching and learning styles adversely affect academic performance. It is the purpose of this study to investigate the degree to which these matches and mismatches of teaching and learning styles produce psychological reactance. One way in which psychological reactance may manifest itself in the classroom situation is in the form of teacher evaluation. It is conceivable that those students whose learning style is not congruent with a particular teaching style will have high levels of reactance. In these instances we can expect that teacher evaluations will be lower.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this study is to investigate the impact of various teaching and learning style combinations upon psychological reactance. Students whose learning style is at odds with a particular teaching style will likely not do as well in the class as students who are matched up with a teaching style that matches their preference for learning. Likewise, it is expected that students who are conformers will likely do well in all situations. It is expected that psychological reactance will be produced in students that are in a mismatch with a particular teaching style. This chapter describes the subjects, procedure, and research design utilized in this study.

Subjects

Subjects were selected through convenience cluster sampling from Northwestern Oklahoma State University (NWOSU) and Northern Oklahoma College (NOC). Data was collected at a branch campus in Enid, Oklahoma and a main campus in Alva, Oklahoma for the Fall term of 1998. The branch commuter campus serves dual populations of the two-year college (NOC) and the four-year university (NWOSU).

An enrollment of 1,180 students was reported at this campus for the Fall 1998 semester (T. Zwink, personal communication, December 23, 1998). Additional subjects were obtained from the NWOSU main campus. This university reported a Fall enrollment of 1,555 students (T. Zwink, personal communication, December 23, 1998). Subjects were selected based upon their enrollment in Introductory Psychology to ensure that there was no overlap of subjects. A copy of the oral solicitation and consent form is presented in Appendix I. The proposal of this study was accepted by the Institutional Review Board (Appendix J).

A review of Kolb's technical specifications (1995) and articles by Philbin, Meier, Huffman and Boverie (1995) indicated that the learning style inventory would produce an uneven distribution of subjects across learning styles. Therefore, in order to meet the 10 subjects per cell criteria it was ascertained that approximately 250 to 300 subjects would be needed. An ongoing tally was kept in order to halt the data collection process when the minimum of 10 subjects per cell criteria was met. A final sample of 259 subjects was obtained. Table II contains the demographic characteristics for the sample. The sample was 37.5% males and 62.5% females. The majority of subjects were freshman (67.6%) and sophomores (15.8%) with smaller percentages reported for higher classifications of junior, senior and graduate students (7.3%, 3.5% & 5.8% respectively). The race distribution was as follows: 3.5% African American, 2.3% Hispanic, 5.8% Native American, 83.4% Caucasian and 5% coded as other. Almost 3/4ths of the sample was under the age of 24. The age breakdown was as follows, 49.4% 19 years old or less, 25.1% between 20 and 24, 6.9% between 25 and 29, 8.1% between 30 and 34, and 10.4% older than 34. Finally, the majority of students were undergraduates at NWOSU

(55.6%). NOC had a 39% representation, while graduate students comprised 5.4% of the sample.

TABLE II

FREQUENCIES AND PERCENTAGES FOR DEMOGRPHIC INFORMATION
(n=259)

	Frequency	Percent
Gender		
Male	97	37.5
Female	162	62.5
Classification		
Freshman	175	67.6
Sophomore	41	15.8
Junior	19	7.3
Senior	9	3.5
Graduate Student	15	5.8
Race		
African American	9	3.5
Hispanic	6	2.3
Native American	15	5.8
Caucasian	216	83.4
Other	13	5.0
Age		
19 or less	128	49.4
20-24	65	25.1
25-29	18	6.9
30-34	21	8.1
35 or more	27	10.4
College/University		
NOC	101	39.0
NWOSU	144	55.6
NWOSU-Graduate School	14	5.4

Instruments

The Hong Psychological Reactance Scale (Hong & Page, 1989) was used to determine general psychological reactance and as a basis for creating a situational measure of psychological reactance germane to this study. The 14 item scale consists of items such as "Regulations trigger a sense of resistance in me" and "It disappoints me to see others submitting to society's standards and rules." See Appendix G for the entire 14 item instrument. Each item is answered on a 5-point Likert type scale where 1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, and 5=strongly agree. Hong and Page (1989) report a 4-factor structure that accounts for 52.70% of the variance. Test-retest reliability is reported as .89 over a 2-week period, while Cronbach alpha is .77. Further factor analytic validity, reported in Hong (1992), revealed that the 14-item scale was almost identical to the original scale in terms of factor structure. An alpha of .81 and a split-half reliability of .76 were also reported. Finally, Hong and Faedda (1996) refined the original 14-item scale into an 11-item scale. In this study the original scale accounts for 54.1% of the factor variance, .80 alpha level, and a split-half of .77, while the revised 11-item scale accounted for 61.2% of the variance in the factor analysis, an alpha level of .77 and a split-half reliability of .73. Additionally, correlation coefficients between the 14-item and 11-item scale provide evidence of convergence and discriminant validity (see Hong & Fadedda, 1996).

The Kolb Learning Style Inventory (1985) is a much-used instrument that is based upon individual preferences for learning. This instrument classifies individuals into 4 groups (see Appendix C), feeling/sensing (concrete experience), watching (reflective

observation), thinking (abstract conceptualization) and doing (active experimentation). These poles create two dimensions; a thinking-feeling dimension (called abstract-concrete) and a doing-watching (called active-reflective) dimension. Individual placement on these continua yield four distinct learning styles: converger, diverger, assimilator, and accomodator. The Learning Style Inventory (LSI) consists of 12 item stems such as, "When I learn", "I learn by" and "I learn best when." See Appendix E for all items in the LSI. For each item stem there are 4 choices which the subject must rank order from 1=least like you to 4=most like you. For example the choices for the stem "When I learn" are "I like to deal with my feelings," "I like to watch and listen," "I like to think about ideas," and "I like to be doing things." The choices are in column format so that when completed the totals of each column can be easily tabulated. These column totals represent scores on the learning dimensions, concrete experience (CE), reflective observation (RO), abstract conceptualization (AC) and active experimentation (AE). These column totals locate each individual on the two continua by computing AC-CE and AE-RO. This number is plotted on a preprepared axis so that the final learning style classification can be ascertained.

The following reliabilities are from Kolb (1985). Cronbach's alpha is reported as .82 for CE, .73 RO, .83 AC, .78 AE, .88 AC-CE and .81 AE-RO. Split-half reliabilities are as follows: .81 CE, .71 RO, .84 AC, .83 AE, .85 AC-CE and .82 AE-RO. Validity information and norms for the LSI are reported in Kolb (1985).

Materials/Apparatus

It is expected that if a scale were to be constructed for use in the educational setting and it was to be useful in measuring psychological reactance in classroom settings, it would need to be convergently related with the Hong scale. A scale of situational-based educational psychological reactance was created by tailoring the items in the Hong 14-item psychological reactance scale (discussed previously) to reflect an educational setting. Items were reworded so that they could be directly linked to a teaching scenario (see Appendix G for the revised scale). For example "The regulations of this class would trigger a sense of resistance in me" and "It would disappoint me to see others submitting to this classes' standards and rules." Three additional items were constructed and included in this scale: "I would probably perform lower than my ability in this class," "I would consider dropping out of this class," and "I would challenge the professor and students in this class at every opportunity." The complete scale is presented in Appendix G. The 17-items are rated with the same 5-point Likert scale ranging from 1=strongly disagree to 5=strongly agree. The scale was proofread by two researchers familiar with the psychological reactance literature.

Teaching Style Vignettes were created using Bigge's (1982) theory of learning overview and Reinsmith's (1992) teaching style description. A common vignette template was designed by constructing a single narrative description of a typical first day in a college classroom. Using the overviews of learning and teaching style descriptions, four vignettes were produced from the common template. The templates share a common base, but differ in terms of teaching style based upon the work of Bigges and Reinsmith. Once these four vignettes began to take shape, outside editors validated them. After

several revisions and corrections, a final validation check was conducted in which each vignette was read and matched to a teaching style description. Four educational experts all correctly matched the vignette to the corresponding teaching style.

The Student Evaluation of Educational Quality (SEEQ) instrument was devised by Marsh (1987). See Appendix D for the items in this instrument. This instrument provides a multidimensional characterization of teacher effectiveness. For an excellent review of the nature of teacher evaluations see Feldman (1996). For the purposes of this study, it was necessary to tailor the SEEQ into a more usable scale. Therefore, each section of the original SEEQ was incorporated into a question to be used in this study. See Appendix H items 39 through 49 for the revised scale. Examples of the final items are as follows, "I would find this course intellectually challenging and stimulating" and "From what you have read the course workload in this case relative to other courses would be." Items 39 through 44 were answered on a 5-point Likert-type scale so that A=strongly disagree and E=strongly agree. Items 45 though 49 were answered on a 5-point Likert-type so that A=very easy and E=very hard with C=medium. This scale was truncated for two main reasons: 1) the vignettes portray a typical first day in the classroom, so most items in the original SEEQ would not be appropriate because they are based upon more information than was given, and 2) time constraints of the data collection process dictated that no more than 50 items be used for the entire study. Therefore, a streamlined instrument was needed.

Procedure

Prior to the beginning of the semester, professors of introductory level psychology classes from all campuses involved were selected and approached for permission to use their students. Introduction to Psychology classes were chosen in order to ensure that there was no overlap of students in the data collection portion of the study. The purpose and scope of the study were described in detail to the professors. Once permission was obtained, experimenters met with each class to explain the basic procedure of the study. At this meeting, informed consent and confidentiality agreements were obtained, and a brief overview of the purpose and description of the study was provided. At this time, students completed the Kolb Learning Style Inventory (Appendix E). Student demographic information and other validity related constructs were included at this time to help define the sample characteristics. Students were not identified and complete confidentiality was ensured.

Once this step was completed, students were asked to approach the front of the class where there were four stacks of colored packets, each representing a distinct teaching style scenario. Each stack of teaching style packets was labeled by learning style. Students were directed to go to the stack that was labeled with their particular learning style. They were told to pick up the vignette on the top of that stack. Each student returned to his or her desk with one vignette. The four vignettes (see Appendix F) that portray examples of the first day of class for each of the teaching styles were ordered sequentially in the piles to ensure a generalized completely randomized factorial block design and to ensure that any order effects would be controlled for. After reading the assigned vignette, students completed the revised Hong psychological reactance scale

(Appendix G) and the revised SEEQ (Appendix D) in order to ascertain the degree to which the teaching style influenced their level of psychological reactance. Changes in psychological reactance and teacher effectiveness ratings due to the interaction of teaching styles and the student's learning style were assessed.

Sequence of Procedure

1. Confidentiality and release form
2. Demographic questionnaire
3. Kolb's Learning Style Inventory
4. Read vignette (randomly assigned)
5. Complete revised Hong Scale and SEEQ in regard to vignette

Design

A 4 x 4 quasi-experimental factorial analysis was used. In the generalized completely randomized factorial block, subjects completed the LSI and based upon the results they were assigned to a sequentially ordered stack of vignettes. Table 3 reveals the number of subjects found in each cell. As can be seen, the Converger learning style consistently yields the fewest subjects. However, most rows and columns are equally representative.

TABLE III

OBSERVED CELL SIZES FOR TEACHING BY LEARNING STYLE DESIGN

	Assimilator	*Converger*	*Acomodator*	*Diverger*
Presentational	n=23	n=12	n=15	n=16
Initiatory	n=21	n=12	n=17	n=15
Dialogic	n=22	n=11	n=17	n=16
Student-centered	n=20	n=10	n=16	n=16

Analysis

SPSS for windows version 6.0 was used in the data analysis process. The analysis proceeded in 3 steps. First, the dependent variables used in this study were analyzed to ascertain the validity of the created measure of educational psychological reactance and the SEEQ. A factor analysis of the educational reactance scale and the SEEQ were conducted as well. Second, a two-factor analysis of variance for the educational reactance was conducted. Additionally, post hoc analysis was conducted to isolate the specific effects. Third, a two-factor analysis of variance for the SEEQ was conducted. Again, the appropriate post hoc analysis was conducted.

CHAPTER IV

PRESENTATION OF FINDINGS

Introduction

In this chapter, the dependent variables are discussed first, followed by the main analysis of teaching style, learning style and educational psychological reactance. And finally, the analyses for teaching style, learning style and the SEEQ are presented.

The Dependent Variables

Items from the Educational Psychological Reactance Scale (EPRS) were factor analyzed using principle components analysis and a varimax rotation. In line with Hellman & McMillin's (1997) caution in using the original scale as a multidimensional construct and the results of an exploratory factor analysis and a subsequent reliability analysis, this study will use the EPRS as a unidimensional measure.

In Table IV the results of the factor analysis of the revised Student's Evaluation of Educational Quality are presented. Note that items 7 through 11 are reverse coded to ensure conceptual clarity. The principle components factor analysis with a varimax rotation yielded a 3-factor solution that accounted for 66.9% of the variance. Factor 1 is comprised of items 1, 3, 4, 5, 10 and 11, and accounted for 37.3% of the total variance. Factor 2 is comprised of items 6, 7, 8 and 9, and accounts for 19.3% of the total variance.

Factor 3 is comprised of items 2 and 5, and accounts for 10.3% of the variance. Due to the literature concerning the SEEQ's multidimensionality (see Feldman, 1996) and a subsequent reliability analysis, the factors will be used in lieu of the unidimensional scale. The Factor 1 items seem to indicate the mechanics of the course such as level of intellectual stimulation, clarity of expectations, student participation, workload, and interest level; therefore Factor 1 will be called course structure. Factor 2 items are concerned with methods of evaluation, comparison to other courses, comparison of instructors, and comparison of difficulty level. Therefore this factor is named course comparison. Finally, the last factor is comprised of items related to instructor enthusiasm and friendliness; therefore this factor is named simply instructor.

TABLE IV

FACTOR STRUCTURE FOR THE STUDENT'S EVALUATION OF EDUCATIONAL QUALITY (Loading > .50)

Item	I.	II.	III.	H^2
SEEQ1	.76			.63
SEEQ2			.93	.87
SEEQ3	.77			.65
SEEQ4	.70			.64
SEEQ5	.52		.62	.67
SEEQ6		.84		.73
SEEQ7		.84		.75
SEEQ8		.84		.71
SEEQ9		.78		.63
SEEQ10	.68			.49
SEEQ11	.77			.60
Eigenvalue	4.11	2.12	1.12	-
% explained	37.30	19.30	10.30	-
Cumulative %	37.30	56.60	66.90	-

Table V presents the means and standard deviations for the dependent variables. The Educational Psychological Reactance scale mean is 44.41 with a standard deviation of 9.76. The SEEQ factor means are 19.24, 11.75 and 6.94 respectively, while the SEEQ factor standard deviations are 5.08, 3.05 and 1.69 respectively. Differences in means, standard deviations, and range are due to the number of items in each scale. For instance the EPRS has 17 items in it, compared to 14 items in the HPRS.

TABLE V

MEANS, STANDARD DEVIATIONS, AND RANGE FOR THE EDUCATIONAL PSYCHOLOGICAL REACTANCE SCALE, HONG'S PSYCHOLOGICAL REACTANCE, THE OVERALL STUDENTS EVALUATION OF EDUCATIONAL QUALITY, AND THE FACTORS OF THE SEEQ

	Mean	Std. Deviation	Range
EPRS	44.41	9.76	61
HPRS	41.98	7.64	51
SEEQ	30.99	6.75	35
SEEQ I.	19.24	5.08	24
SEEQ II.	11.75	3.05	16
SEEQ III.	6.94	1.69	8

Correlations between scales and the subsequent reliability coefficients are presented in Table VI. Of interest here is the correlation of the original psychological reactance scale and the educational psychological reactance and SEEQ factors. Only the EPRS was significantly related to the HPRS with r = .54. This provides validity for the revised EPRS. However, the SEEQ factors have no relationship to the original psychological reactance scale, suggesting that they measure different constructs. The EPRS was also significantly related to the SEEQ and its factors. Intercorrelations between the factors indicate strong convergent validity with the exception of SEEQ 2 and

3 (r = .07). The Chronbach Alpha reliabilities are as follows: for the EPRS α = .85, HPRS α = .80, SEEQ α = .84, SEEQ 1 α =.82, SEEQ 2 α = .86, and SEEQ 3 α = .55. The low relabilty of the SEEQ factor 3 is due to having only two items. The following research will utilize only the factors of the SEEQ in analysis.

TABLE VI

CORRELATION AND RELIABILITY COEFFICIENTS† FOR THE EDUCATIONAL PSYCHOLOGICAL REACTANCE SCALE, HONG'S PSYCHOLOGICAL REACTANCE, STUDENTS EVALUATION OF EDUCATIONAL QUALITY, AND THE SEEQ FACTORS

	EPRS	HPRS	SEEQ‡	SEEQ I.	SEEQ II.	SEEQ III.
EPRS	.85	.54	-.43	-.44	-.22	-.25
HPRS	-	.80	-.05	-.09	.03	.04
SEEQ‡	-	-	.84	.91	.71	.39
SEEQ I.	-	-	-	.82	.34	.48
SEEQ II.	-	-	-	-	.86	.07
SEEQ III.	-	-	-	-	-	.55

†Reliability coefficients reported on the diagonal
‡Item 2 removed from scale

Analysis of Teaching/Learning Style and EPRS

Cell size, means, and standard deviations are presented in Table VII. The cell sizes range from 10 to 23. Learning style was distributed as follows: 86 assimlators, 45 convergers, 65 accomodators, and 63 divergers. Assignment to teaching style was fairly evenly distributed with 66 presentational, 65 initiatory, 66 dialogic, and 62 student-centered. The means ranged from 39.94 for the diverger by dialogic group to 50.20 for the accomodator by presentational group. Higher scores indicate higher reactance. The standard deviations ranged from 6.03 for the converger by initiatory group to 13.63 for

the accomodator by initiatory group. As can be seen, the converger group has a higher mean total than the rest of the learning styles. Likewise, the presentational style has a higher mean score. The total sample of 259 subjects had a mean score of 44.41 on the educational psychological reactance scale. The standard deviation for the entire sample was 9.76.

TABLE VII

MEANS, FREQUENCY, AND STANDARD DEVIATIONS FOR EDUCATIONAL PSYCHOLOGICAL REACTANCE:
LEARNING STYLE BY TEACHING STYLE

	Assimilator	Converger	Accomodator	Diverger	Total
Presentational					
Mean	46.52	47.67	50.20	49.38	48.26
N	23	12	15	16	66
Std. Dev.	10.41	9.46	7.90	8.78	9.24
Initiatory					
Mean	41.29	44.25	43.59	41.60	42.51
N	21	12	17	15	65
Std. Dev.	9.85	6.30	13.63	8.63	10.07
Dialogic					
Mean	40.27	46.73	43.53	39.94	42.11
N	22	11	17	16	66
Std. Dev.	8.10	11.52	11.01	6.89	9.43
Student-centered					
Mean	45.50	48.90	43.06	43.00	44.77
N	20	10	16	16	62
Std. Dev.	8.78	9.69	8.38	10.22	9.23
Total					
Mean	43.41	46.80	44.97	43.51	44.41
N	86	45	65	63	259
Std. Dev.	9.57	9.20	10.74	9.24	9.76

The results of the analysis of variance (Table VIII) indicate that the interaction of learning style by teaching style was not significant for EPRS, $F_{(9, 243)} = .63, p > .77$. The

main effect for learning style was not significant, $F_{(3, 243)} = 1.64, p > .18$. The main effect for teaching style was significant, $F_{(3, 243)} = 5.17, p < .002$. Post hoc analysis for the main effect of teaching style is presented in Table IX. This test reveals that the presentational style was significantly different from both the initiatory and dialogic teaching styles (Mean differences 5.75 and 6.15 respectively). All other teaching styles were not found to be significantly different.

TABLE VIII

ANOVA SUMMARY TABLE FOR EPRS

Source	Sum of Squares	df	Mean Square	F	Sig.
Learning Style	447.404	3	149.135	1.641	.180
Teaching Style	1408.530	3	469.510	5.168	.002
LS * TS	514.803	9	57.20	.630	.771
Error	22077.4	243	90.853		
Total	24594.8	258	95.329		

TABLE IX

TUKEY HSD POST HOC TEST FOR EPRS

Teaching Style	Mean Difference	Std. Error	Sig.
Presentational by			
Iniatory	5.7499	1.660	.003
Dialogic	6.1515	1.654	.001
Student-centered	3.4834	1.681	.162
Initatory by			
Dialogic	.4016	1.660	.995
Student-centered	-2.2665	1.687	.535
Dialogic by			
Student-centered	-2.6681	1.681	.386

Analysis of Teaching/Learning Style and SEEQ

The cell sizes, means, and standard deviations for Factor 1 of the SEEQ are presented in Table X. Factor 1 represents the course structure aspect of the teacher effectiveness evaluations. The means range from 13.33 for the accomodator by presentational group to 23.45 for the converger by dialogic group. Across learning styles the means are 19.12 for the assimilator group, 19.44 for the converger group, 19.54 for the accomodator group and 18.95 for the diverger group. The means for the teaching styles are as follows: 14.23 for presentational, 20.16 for initiatory, 22.27 for dialogic, and 20.48 for student-centered. The standard deviations range from 2.02 for the converger by dialogic group to 5.59 for the accomodator by initiatory group. The standard deviations for the learning style groups are 5.11 for assimilators, 4.77 for convergers, 5.86 for accomodators, and 4.43 for divergers. The standard deviations for teaching style are presentational, 4.49; initiatory, 3.93; dialogic, 2.95; and student-centered, 4.76. As can be seen, the means for the learning styles are fairly similar, while the mean for the dialogic teaching style is fairly high at 22.27. The mean of the presentational teaching style is low at 14.23. The total mean for the sample of 259 is 19.24 with a standard deviation of 5.08.

TABLE X

MEANS, FREQUENCY, AND STANDARD DEVIATIONS FOR THE STUDENTS EVALUATION OF EDUCATIONAL QUALITY: LEARNING STYLE BY TEACHING STYLE FOR SEEQ I

SEEQ I.	Assimilator	Converger	Accomodator	Diverger	Total
Presentational					
Mean	14.57	14.33	13.33	14.50	14.23
N	23	12	15	16	66
Std. Dev.	5.50	4.23	4.19	3.50	4.49
Initiatory					
Mean	20.10	20.83	20.12	19.33	20.16
N	21	12	17	15	65
Std. Dev.	3.56	2.82	5.59	3.06	3.93
Dialogic					
Mean	22.77	23.45	21.47	21.63	22.27
N	22	11	17	16	66
Std. Dev.	2.72	2.02	3.45	3.05	2.95
Student-centered					
Mean	19.30	19.50	22.69	20.38	20.48
N	20	10	16	16	62
Std. Dev.	4.31	4.28	5.50	4.56	4.76
Total					
Mean	19.12	19.44	19.54	18.95	19.24
N	86	45	65	63	259
Std. Dev.	5.11	4.77	5.86	4.43	5.08

The results of the analysis of variance (Table XI) indicate that the interaction of learning style by teaching style was not significantly different for SEEQ 1, $F_{(9, 243)} = 1.16$, $p > .32$. The main effect for learning style was not significant, $F_{(3, 243)} = .21$, $p > .89$. The main effect for teaching style was significant, $F_{(3, 243)} = 46.39$, $p < .00$. Post hoc analysis for the main effect of teaching style is presented in Table XII. The Levene statistic that tests for homogeneity was 6.00 ($p < .001$). However, Stevens (1996) indicates that equal or near-equal cell sizes (largest/smallest < 1.5) are conditionally robust. The cell sizes

range from 62 to 66 (see Table X). Nonetheless, caution is urged in the subsequent analysis. This test reveals that the presentational style was significantly different from the initiatory, dialogic, and student-centered teaching styles (mean differences -5.83, -8.05 and –6.26 respectively). The mean difference of –2.21 between initiatory and dialogic teaching styles was also found to be significant.

TABLE XI

ANOVA SUMMARY TABLE SEEQ I

Source	Sum of Squares	df	Mean Square	F	Sig.
Learning Style	10.75	3	3.58	.21	.89
Teaching Style	2324.60	3	774.87	46.39	.00
LS * TS	174.03	9	19.34	1.16	.32
Error	4058.69	243	16.70		
Total	6649.16	258	25.77		

TABLE XII

TUKEY HSD POST HOC TEST FOR SEEQ I

Teaching Style	Mean Difference	Std. Error	Sig.
Presentational by			
Iniatory	-5.83	.71	.00
Dialogic	-8.05	.71	.00
Student-centered	-6.26	.72	.00
Initatory by			
Dialogic	-2.21	.71	.01
Student-centered	-.42	.72	.94
Dialogic by			
Student-centered	1.79	.72	.06

The cell sizes, means, and standard deviations for Factor 2 of the SEEQ are presented in Table XIII. Factor 2 represents the course comparison aspect of the teacher

effectiveness evaluations. The cellular means range from 8.94 for the diverger by presentational group to 14.69 for the diverger by student-centered group. Across learning styles the means are 11.77 for the assimilator group, 12.02 for the converger group, 11.55 for the accomodator group and 11.75 for the diverger group. The means for the teaching styles are as follows: 9.30 for presentational, 12.15 for initiatory, 12.30 for dialogic, and 13.35 for student-centered. The standard deviations range from 1.50 for the accomodator by dialogic group to 3.52 for the diverger by student-centered group. The standard deviations for the learning style groups are 3.18 for assimilators, 2.78 for convergers, 2.60 for accomodators, and 3.50 for divergers. The standard deviations for teaching style are presentational, 2.72; initiatory, 2.48; dialogic, 1.87; and student-centered, 3.41. As can be seen, the means for the learning styles are fairly similar, while the mean of the student-centered teaching style is fairly high at 13.35. The means of the presentational teaching style is fairly low at 9.30. The total mean for the sample of 259 subjects is 11.75, with a standard deviation of 3.05.

TABLE XIII

MEANS, FREQUENCY, AND STANDARD DEVIATIONS FOR THE STUDENTS EVALUATION OF EDUCATIONAL QUALITY: LEARNING STYLE BY TEACHING STYLE FOR SEEQ II.

SEEQ II.	Assimilator	Converger	Accomodator	Diverger	Total
Presentational					
Mean	9.43	9.33	9.47	8.94	9.30
N	23	12	15	16	66
Std. Dev.	3.01	2.77	2.00	3.02	2.72
Initiatory					
Mean	12.86	13.00	11.82	10.87	12.15
N	21	12	17	15	65
Std. Dev.	2.95	1.71	1.98	2.36	2.48
Dialogic					
Mean	11.68	12.09	13.12	12.44	12.30
N	22	11	17	16	66
Std. Dev.	1.59	2.07	1.50	2.25	1.87
Student-centered					
Mean	13.40	14.00	11.56	14.69	13.35
N	20	10	16	16	62
Std. Dev.	3.47	2.16	3.37	3.52	3.41
Total					
Mean	11.77	12.02	11.55	11.75	11.75
N	86	45	65	63	259
Std. Dev.	3.18	2.78	2.60	3.50	3.05

The results of the analysis of variance (Table XIV) indicate that the interaction of learning style by teaching style was significantly different for SEEQ 2, $F_{(9, 243)} = 2.33, p < .02$. The main effect for learning style was not significant, $F_{(3, 243)} = .52, p > .67$. The main effect for teaching style was significant, $F_{(3, 243)} = 27.78, p < .00$. Since the interaction was significant, the main effects will be ignored.

Keppel (1991) explains two methods for conducting post hoc analysis for two-factor designs, the analysis of simple effects and the interaction comparison methods.

Since teaching style has consistently been significantly different in previous analyses, a simple effects analysis for each vignette would seem appropriate. However, a visual scan of the cell means indicates that the presentational teaching style is ordinal and does not interact with the other teaching styles. The presentational style is clearly rated differently from the other teaching styles. So, the simple effects analysis will look at the learning styles rating of Factor 2 broken down for each vignette. An analysis of variance for the assimilator learning style by teaching styles for the SEEQ II was significant, $F_{(3, 82)} = 8.48$, $p < .00$. The results are presented in Table XV. A further analysis of mean differences yielded significant differences between the presentational style and the other three teaching styles (see Table XIX). An analysis of variance for the converger learning style by the four teaching styles for the SEEQ II was significant, $F_{(3, 41)} = 9.32$, $p < .00$. The results are presented in Table XVI. A further analysis of mean differences yielded significant differences between the presentational style and the other three teaching styles (see Table XIX). An analysis of variance for the accomodator learning style by the four teaching styles for the SEEQ II was significant, $F_{(3, 61)} = 6.79$, $p < .00$. The results are presented in Table XVII. A further scanning of the mean differences yielded a significant difference between the presentational teaching method and both the initiatory and dialogic methods (see Table XIX). An analysis of variance for the diverger learning style by the four teaching styles for the SEEQ II was also significant, $F_{(3, 59)} = 11.72$, $p < .00$. The results are presented in Table XVIII. A further scanning of the mean differences yielded a significant difference between the presentational teaching method and both the initiatory and the student-centered methods. Additionally the iniatory and student-centered methods were also significantly different (see Table XIX).

TABLE XIV

ANOVA SUMMARY TABLE SEEQ II

Source	Sum of Squares	df	Mean Square	F	Sig.
Learning Style	10.59	3	3.53	.52	.67
Teaching Style	568.44	3	189.48	27.78	.00
LS * TS	143.12	9	15.90	2.33	.02
Error	1657.32	243	6.82		
Total	2396.19	258	9.29		

TABLE XV

ANALYSIS OF SIMPLE EFFECTS FOR ASSIMILATORS BY TEACHING STYLE FOR SEEQ II

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	203.55	3	67.85	8.48	.00
Within	655.80	82	8.00		
Total	859.35	85			

TABLE XVI

ANALYSIS OF SIMPLE EFFECTS FOR CONVERGERS BY TEACHING STYLE FOR SEEQ II

Source	Sum of Squares	df	Mean Square	F	Sig.
Between	137.40	3	45.80	9.32	.00
Within	201.58	41	4.92		
Total	338.98	44			

TABLE XVII

ANALYSIS OF SIMPLE EFFECTS FOR ACCOMODATORS BY TEACHING STYLE FOR SEEQ II

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between	108.16	3	36.05	6.79	.00
Within	323.91	61	5.31		
Total	432.06	64			

TABLE XVIII

ANALYSIS OF SIMPLE EFFECTS FOR DIVERGERS BY TEACHING STYLE FOR SEEQ II

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between	283.89	3	94.63	11.73	.00
Within	476.05	59	8.07		
Total	759.94	62			

TABLE XIX

POST HOC TESTS FOR TEACHING STYLE ACROSS LEARNING STYLES

Assimilator	Mean Difference	Std. Error	Sig.
Presentational by			
Iniatory	-3.42	.85	.00
Dialogic	-2.24	.84	.05
Student-centered	-3.97	.87	.00
Initatory by			
Dialogic	1.18	.86	.53
Student-centered	-.54	.88	.93
Dialogic by			
Student-centered	-1.72	.87	.21
Converger	**Mean Difference**	**Std. Error**	**Sig.**
Presentational by			
Iniatory	-3.67	.91	.00
Dialogic	-2.76	.93	.02
Student-centered	-4.67	.95	.00
Initatory by			
Dialogic	.91	.93	.76
Student-centered	-1.00	.95	.72
Dialogic by			
Student-centered	-1.91	.97	.22
Accomodator	**Mean Difference**	**Std. Error**	**Sig.**
Presentational by			
Iniatory	-2.36	.82	.03
Dialogic	-3.65	.82	.00
Student-centered	-2.10	.83	.07
Initatory by			
Dialogic	-1.29	.79	.37
Student-centered	.26	.80	.99
Dialogic by			
Student-centered	1.56	.80	.22
Diverger	**Mean Difference**	**Std. Error**	**Sig.**
Presentational by			
Iniatory	-1.93	1.02	.24
Dialogic	-3.50	1.00	.01
Student-centered	-5.75	1.00	.00
Initatory by			
Dialogic	-1.57	1.02	.42
Student-centered	-3.82	1.02	.00
Dialogic by			
Student-centered	-2.25	1.00	.12

The cell sizes, means and standard deviations for Factor 3 of the SEEQ are presented in Table XX. Factor 3 represents the instructor aspects of the teacher effectiveness evaluations. The cell means range from 5.40 for the assimilator by student-centered group to 8.05 for the converger by initiatory group. Across learning styles, the means are 6.81 for the assimilator group, 7.04 for the converger group, 7.22 for the accomodator group, and 6.75 for the diverger group. The means for the teaching styles are as follows: 6.76 for presentational, 7.58 for initiatory, 7.30 for dialogic, and 6.06 for student-centered. The standard deviations range from .75 for the accomodator by dialogic group to 2.12 for the converger by presentational group. The standard deviations for the learning style groups are 1.74 for assimilators, 1.77 for convergers, 1.55 for accomodators, and 1.69 for divergers. The standard deviations for teaching style are presentational, 1.74; initiatory, 1.51; dialogic, 1.12; and student-centered, 1.92. As can be seen, the means for the learning styles are fairly similar, while the mean of the iniatory teaching style is fairly high at 7.58. The student-centered teaching style mean is low at 6.06. The total mean for the sample of 259 is 6.94 with a standard deviation of 1.69.

TABLE XX

MEANS, FREQUENCY, AND STANDARD DEVIATIONS FOR THE STUDENTS EVALUATION OF EDUCATIONAL QUALITY: LEARNING STYLE BY TEACHING STYLE FOR SEEQ III

SEEQ III.	Assimilator	Converger	Accomodator	Diverger	Total
Presentational					
Mean	6.70	6.17	7.00	7.06	6.76
N	23	12	15	16	66
Std. Dev.	1.66	2.12	1.51	1.77	1.74
Initiatory					
Mean	7.67	8.08	7.94	6.67	7.58
N	21	12	17	15	65
Std. Dev.	1.24	.90	1.52	1.91	1.51
Dialogic					
Mean	7.41	7.91	7.24	6.81	7.30
N	22	11	17	16	66
Std. Dev.	1.30	.94	.75	1.17	1.12
Student-centered					
Mean	5.40	5.90	6.63	6.44	6.06
N	20	10	16	16	62
Std. Dev.	1.88	1.73	2.00	1.93	1.92
Total					
Mean	6.81	7.04	7.22	6.75	6.94
N	86	44	65	63	259
Std. Dev.	1.74	1.77	1.55	1.69	1.69

The results of the analysis of variance (Table XXI) indicate that the interaction of learning style by teaching style was not significantly different for SEEQ III, $F_{(9, 243)} = 1.84, p > .06$. The main effect for learning style was not significant, $F_{(3, 243)} = .1.19, p > .31$). The main effect for teaching style was significant, $F_{(3, 243)} = 10.93, p < .00$). Post hoc analysis for the main effect of teaching style is presented in Table XXII. The Levene statistic that tests for homogeneity was 4.63 ($p < .004$). However, Stevens (1996) indicates that equal or near-equal cell sizes (largest/smallest < 1.5) are conditionally

robust. The cell sizes range from 62 to 66 (see Table XX). Nonetheless, caution is urged in the subsequent analysis. This test reveals that the presentational style was significantly different from the initiatory style (mean difference -.83). Those individuals in the student-centered teaching style were also significantly different from the initiatory and dialogic styles (mean differences –1.52 and –1.24 respectively).

TABLE XXI

ANOVA SUMMARY TABLE SEEQ III.

Source	Sum of Squares	df	Mean Square	F	Sig.
Learning Style	8.82	3	2.94	1.19	.31
Teaching Style	80.99	3	27.00	10.93	.00
LS * TS	40.92	9	4.55	1.84	.06
Error	600.44	243	2.47		
Total	735.01	258	2.85		

TABLE XXII

TUKEY HSD POST HOC TEST FOR SEEQ III

Teaching Style	Mean Difference	Std. Error	Sig.
Presentational by			
Iniatory	-.83	.28	.02
Dialogic	-.55	.28	.20
Student-centered	.69	.28	.07
Initatory by			
Dialogic	.28	.28	.74
Student-centered	1.52	.28	.00
Dialogic by			
Student-centered	1.24	.28	.00

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this study was to investigate the impact of teaching style and learning style interactions on psychological reactance. Students' evaluations of teaching styles were also included in this research. Sample data were collected from small college and university populations. Assessment of learning style and dispositional psychological reactance was obtained. Then students were randomly assigned to teaching style vignettes for which they answered questions concerning situational psychological reactance and teacher effectiveness. Upon validation and reliability checks of the dependent variables, the main analyses were conducted. In the following chapter, the results are discussed in three parts: a general conclusion, followed by limitations of the study, and finally the implications for further research.

Conclusions

An analysis of the factor structure of the educational psychological reactance scale (EPRS) revealed four factors. However, the evidence against using the factors prompted its use as a unidimensional scale. Reliability analysis indicated a fairly consistent measure of psychological reactance. Correlation with the original Hong (1992)

psychological reactance scale (HPRS) provided evidence for convergence. Obviously the EPRS and the HPRS measure different aspects of psychological reactance. Whereas, the HPRS is a general orientation, the EPRS is directed toward the classroom situation.

The factor analysis for the Student Evaluation of Educational Quality (SEEQ) instrument proved to be more difficult to interpret. While research suggests caution in looking at teacher evaluations as a unidimensional entity, the first step in constructing a scale for use in this study involved collapsing the original SEEQ into an efficient and usable measure. The results of the factor analysis revealed a clear 3-factor structure. Reliability analysis indicated a consistent view of teacher evaluations. The factors were made up of qualities that revolved around the themes of course structure, comparison to other courses, and instructor characteristics. Convergent and divergent validity was auspicious. The factors of the SEEQ did relate to the measure of educational psychological reactance; however, there was no correlation with the HPRS. The lack of correlation indicates that any relation to psychological reactance must be interpreted from a situational perspective. For these purposes the measure of SEEQ provides three distinct areas that may be useful in the assessment of teacher effectiveness in relation to the psychological reactance phenomenon.

The main analysis of interest was the effects of teaching style and learning style interactions on psychological reactance. Student's learning styles were classified through the Kolb Learning Style Inventory (LSI). Once the students' learning styles were determined, the students were randomly assigned a vignette that depicted one of four different teaching scenarios of a typical first day in the college classroom. These teaching styles were presentational, iniatory, dialogic and student-centered types of classrooms.

Upon completion of reading the teaching style vignette, students answered questions regarding their level of psychological reactance. The results indicated no interaction between teaching style and learning style in terms of psychological reactance. Additionally, learning style was not influential in creating psychological reactance for the students. However, teaching style did affect the psychological reactance levels among students. Specifically, post hoc analysis revealed that the presentational method of teaching produced more psychological reactance than did the initiatory and dialogic teaching styles. This finding makes sense in light of the general conception of reactance as a matter of control. When instructors use high levels of control in the classroom, students may experience a need to resist those efforts. Interestingly, student-centered classrooms yielded only moderate amounts of psychological reactance. One implication here is that while too much control produces higher levels of reactance, no control in the classroom produces more reactance than those teaching styles that have a mixture of student-oriented and teacher-oriented control. Indeed many students in the early portion of their higher education training may need more control than more experienced students do. This finding suggests that control in the classroom should start at a moderate rate and decrease with time.

The analysis of the SEEQ factors proved to be more complex. The first factor that dealt with the qualities of class structure did not produce a significant interaction with teaching style and learning style. Nor did it produce a main effect for learning style. But, again the main effect for teaching style was significant. Specifically, the evaluation of the presentational method of teaching was lower than those of the other three teaching styles. Additionally, the initatory teaching method was rated lower than the dialogic teaching

method. The class climate evaluation appears to be negatively influenced by the more teacher-centered orientations, with a purely presentational format being rated much lower than the other styles. This makes sense when looking further at the questions in this scale; themes like participation, intellectual stimulation, clarity of explanations, workload, and interest, all reveal a quality of approachability to the classroom interaction. Virtually the same pattern was obtained in the analysis of EPRS.

The second factor of the SEEQ was characterized by comparison to other courses. The results of this analysis showed a significant interaction effect. That is, that teaching style and learning style combinations would produce significantly different evaluations in terms of course comparisons. Presentational teaching style was consistently rated lower than the other teaching styles. By isolating the simple effects, significance was consistently found in each learning style. Specifically, the presentational method was different from the other teaching styles in the assimilator and converger groups. This result indicates that the assimilator and converger students consistently rated the presentational teaching style lower. The accomodator group differed in terms of presentational style and with both the initiatory and dialogic teaching styles, but not the student-centered method. For accomodators the presentational and student-centered classes yielded consistently lower appraisals. Finally, the diverger group rated the presentational style lower than the dialogic and student-centered styles. Additionally, the iniatory style was significantly different from the student-centered teaching style. A trend is seen in the diverger group, where the presentational group is rated lowest, and the ratings progressively get better as we move toward the student-centered teaching style. In the original conception of the study, this effect was hypothesized. It was expected that

certain combinations of teacher-student interactions would systematically produce reactance effects. One possible explanation for the differences in learning styles is the very nature of the theoretical construction of the LSI. The experiential aspect of the model indicates that as students move through their learning development, they will progress from diverger, to assimilator, to converger, and finally to the accomodator groups. In looking at this cycle, we see the divergers, those with a feeling-watching orientation, evaluating classes based upon limited experiences, and thereby following a commonsense pattern of rating the courses, namely moving more favorably toward a student-centered classroom. The other learning styles did show marked negativity toward the presentational style compared to the other teaching methods. But the pattern is less discernible. However, if we look at the factor "comparison to other classes" as being more valid for those with greater learning experiences, then it makes sense that the accomodator group, which reflects a feeling-doing orientation, is more realistic in its appraisal of classroom teaching. This group appears to favor the dialogic teaching method above the rest, even in comparison with the student-centered classroom. The notion of some control in the classroom as being optimal comes to mind. The assimilators and convergers (thinking-watching and thinking-doing respectively) show the same pattern, rating the presentational and dialogic styles lower. The iniatory and student-centered styles are rated higher in these instances. The common characteristic here is that both these learning style groups have a thinking orientation. Further analysis of these effects is warranted.

The final analysis of SEEQ Factor III revolved around the idea of instructor characteristics, namely the instructor's enthusiasm and friendliness. Again the only effect

that was significant was the main effect for teaching style. The specific differences were between the student-centered teaching style and both the iniatory and the dialogic methods. Additionally, the presentational style was different from the iniatory style. It is expected that the more a teacher incorporates student-interaction into the classroom, the more likely he or she is to be perceived as friendly. The question is to what degree is oddity in the classroom likely to incite a lower evaluation. Perhaps students with limited experience, when faced with a purely student-centered classroom, rate the instructor lower due to a perception of eccentric behavior and not to the personal qualities mentioned above. The analysis above again indicates that those moderate control level classes (iniatory and dialogic) yield the more favorable ratings.

In summary, the research hypotheses reported in Chapter One were supported in some cases and not in others. The effects of psychological reactance and teaching style were readily demonstrated. However, learning style and the interaction effects of teaching and learning styles were not supported for the EPRS. Evidence was provided for the relationship between educational psychological reactance and student evaluations. The correlations were all negative and significant. The student evaluation factors all demonstrated an effect in relation to the teaching main effect. The course structure and instructor factors were not influenced by learning style, nor was an interaction observed. However, there was an interaction between the student evaluation and the course comparison dimension.

Limitations of the Study

Some caution is suggested in generalizing these findings. Several areas of concern need to be addressed to help clarify the results. First, the measurement of educational psychological reactance as a situational variable is advisable. The correlation between the EPRS and the HPRS provide some semblance of convergence; however, the correlations with the other dependent variables differ somewhat. The HPRS is considered a dispositional form of psychological reactance while the EPRS is obviously geared toward the classroom situation. The utility of the EPRS is discussed in the next section.

The second area of concern, is the measurement of the SEEQ. Many authors point to the fact that teacher evaluations are inherently multidimensional, so this approach was used with the abbreviated version of the scale. Again, the scale was directed to a specific classroom situation. It was expected that this teacher evaluation measure would shed light upon possible outcomes of psychological reactance. Some mild evidence suggests that evaluations and reactance mirror each other in terms of teaching styles, but there is little indication that these effects are observed across learning styles.

A third area of concern is the fact that the teaching styles were represented in terms of a typical first day in the classroom. This provides the student with little more than socialization effects in the classroom experience. Obviously, more exposure to the particular style in question would add validity to the study. As indicated by Duffy (1995), each semester has its unique rhythm. As students adjust to the instructor and visa versa, some of these effects may become less pronounced. Conversely, they may become more striking. One final note, not all students come to the classroom with the same experiences

in terms of undergraduate training. Hopefully these effects were masked by the randomization to teaching style.

A final area of concern is the fact that learning style classifications were not equally distributed. The converger group in this case was underrepresented. When dealing with naturally occurring classifications of subjects, it is often difficult to predict the distribution. In fact, in this case it was expected that there would be an uneven distribution, but it was expected that perhaps the diverger group would be underrepresented. While the literature indicated that most studies were based upon undergraduate and graduate populations, perhaps more attention should be paid to the fact that using primarily Introduction to Psychology students may have affected the way this sample was distributed.

Implications for Future Research

While providing an excellent investigation into the area of psychological reactance in the classroom, this study really serves as a catalyst for future studies. Validation of the educational psychological reactance scale would be a good start. The factor structure and reliability warrant closer inspection than was needed in this study. It is expected that as teachers become more concerned with their particular style in the classroom, a useful educational reactance scale could be beneficial. As mentioned in the literature review, department heads should begin to assign the most effective persons available to each type of classroom experience. It is assumed that new students have less experience on which to base an opinion regarding levels of control than do those students who have been in many classes (i.e., those with experience). The content of the courses

could also dictate the amount of control that students prefer in the class. Introductory classes provide more room for questioning one's freedoms, versus the more specialized classes, where an expert in the field is typically unquestioned. The EPRS would provide a measure of the impact that teachers make in the classroom.

The measurement of learning style really did not produce any discernible effects with psychological reactance. According to previous findings, self-esteem and self-consciousness seem to be related to psychological reactance. Therefore, it would be of interest to investigate issues such as these, as well as the areas of self-concept and efficacy. Such studies would provide useful explanations for teachers who produce psychological reactance in their classrooms. One other area that was pursued and later dismissed and that would likely shed light on this type of study is locus of control. It seems logical that students who differ in their locus of control would be psychologically reactant under certain classroom situations. Indeed psychological reactance is an issue of control. Students with an external locus of control would probably be more comfortable in a teacher-directed class, while those with an internal locus of control may be more comfortable in the student-centered classroom. These and other student characteristics would be of value in terms of investigating psychological reactance in the classroom.

In line with psychological reactance theory, it is posited that individuals must first perceive that they have the freedom before they react against its loss. Therefore, it would be of value to assess to what extent students believe that they have a right to control in the classroom. In an informal poll (McMillin, Fall, 1998), students in an undergraduate class were asked what they considered to be freedoms in the classroom. Answers ranged from having food and drink in the class, to being able to ask questions without feeling

that they would be chastised for it. Additionally, answers like the ability to interact with the instructor and other students were deemed important, as was attendance in the course. A more detailed analysis of the expectations of freedom and control would be a logical step in the understanding of the phenomenon of psychological reactance in the classroom.

The outcomes of psychological reactance in the classroom would also be a logical follow up. It is inadvertently implied that psychological reactance is a negative state. However, in its original conception, psychological reactance is seen as a motivating force. Perhaps, a little psychological reactance is necessary to keep students motivated and intellectually engaged. Obviously a low level of psychological reactance can be seen as a classroom management preference, but does it really lend itself to the motivation to learn? Conversely, high psychological reactance in the classroom can have adverse effects simply due to the oppositional nature of these individuals. But, moderate levels are likely to produce enough motivation for intellectual challenge, yet not enough to cause rebellion and anarchy. Additional research should address the question of how psychological reactance might manifest itself in terms of student performance. The possible effects on grades, persistence, attrition, and acquisition of knowledge would likely provide some interesting findings.

While much remains left to do in the study of psychological reactance in the classroom, this study has provided a foundation on which to build. The evidence suggests that teachers do in fact have an impact on their students, and hopefully this research will provide insight into these teacher-student interactions.

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APPENDIXES

APPENDIX A

TEACHING PHILOSOPHY OVERVIEW

Teaching Philosophy Overview

The Mental Discipline Classroom-Students are seen as morally bad, yet active in pursuit of learning. These students are viewed as greedy, corrupt, and violent. They are motivated toward depravity if not tempered by the teacher authority. Student's left to their own devices express their sinful nature. The teacher's role is primarily to curb bad impulses and to discipline the mind. Information is best presented externally and in the form of rote memory and drill work. Mistakes in this classroom are view as moral backsliding.

The Behaviorism Classroom- Students are seen as morally neutral and pursue learning passively and reactively. Personality is shaped by what they learn and motivation comes about through deprivation. The teacher's role in this classroom is as behavior engineer and instructional designer. Learning occurs through external reinforcement. Socially sanctioned information should be presented in a linear and sequential fashion. Mistakes are merely products of non-reinforcing events.

The Cognitive Field Classroom-Students are seen as morally neutral and interact simultaneously with their environment in the pursuit of learning. Students are seen as curious problem solvers who seek to clarify fuzzy and problematic situations. They seek to understand. The goal of the teacher is to provide student's input in their learning and to function in a problem filled society, to arouse curiosity and interest. Information is best presented as negotiable and problem centered in which discovery leads to new found insights. Mistakes in this class are viewed as a natural part of learning.

The Humanism Classroom-Students are seen as being morally good and are active agents in their understanding of knowledge. They are viewed as being kind, humane and inherently good. Students left to their own devices will gravitate toward goodness. The teacher acts as a facilitator and helps students develop personal truths and internalize learning. Students are interested and curious. The classroom information is student selected and the best way students acquire learning is by doing. Mistakes are viewed as learning experiences.

APPENDIX B

TEACHING STYLE OVERVIEW

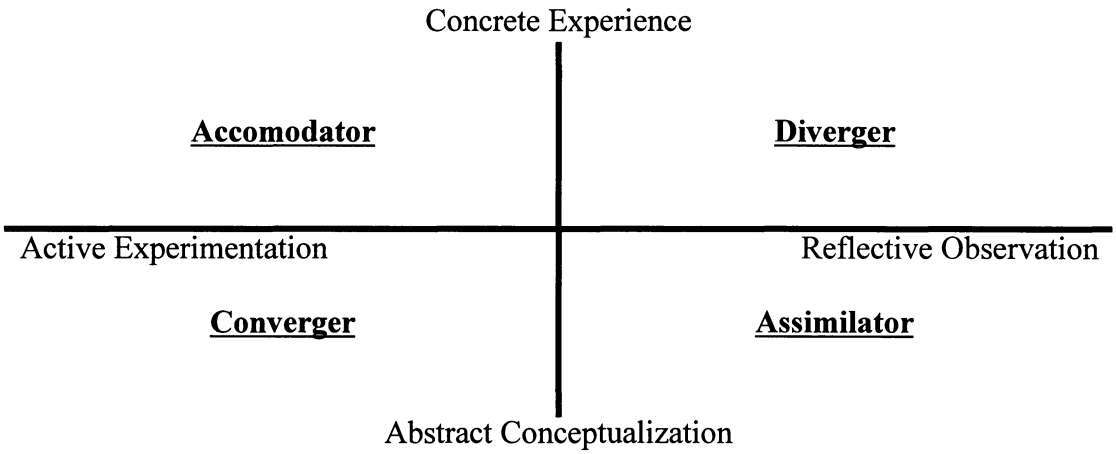
Teaching Style Overview

Modes of Teaching	A. Presentational	B. Initiatory	C. Dialogic	D. Student-centered
Philosophy	Mental discipline	Behaviorism	Social learning	Humanism
Class Interaction	Minimal at best	Structured, designed to meet certain objectives	Balanced between teacher and student, very involved from student perspective	Highly interactive, student driven
Purpose of Education	Dispense knowledge	Reinforce students, arrive at predetermined conclusions	Exploration of knowledge	Develop student potential as learner
Way Information is Acquired	Rote memory, straight lecture	Scripted questions, reinforcement of correct answers	Synthesis of knowledge, high verbal interaction	Application of experience to theory, gains individually determined
Classroom Management	High structure, teacher as authority	Predetermined goals and objectives	Interactive, follows teacher lead in acquisition of knowledge	No structure, free-flowing and personal
Impetus for Learning	Knowledge only	Reinforce-ment of achievement	Social interaction-content balanced, curiosity	Self-growth, personal understanding

APPENDIX C

KOLB'S LEARNING STYLES

Kolb's Learning Styles



The Dimensions:

Concrete experience = sensing/feeling dimension

Reflective observation = watching dimension

Abstract conceptualization = thinking dimension

Active experimentation = doing dimension

Description of Learning Style Characteristics:

Accomodator = leaders, risk-takers, and achievers (technical, practical fields), independent discovery, active participants

Assimilator = planners, theorists, and analysts (mathematics, basic sciences), lecture, demonstration exploration

Diverger = creators, artists, sensitivity (humanities, some liberal arts), interactive, computer-assisted, problem centered

Converger = problem-solvers, deducers, and decision-makers (engineers), lecture, hand's on exploration

APPENDIX D

STUDENTS' EVALUATIONS OF EDUCATIONAL QUALITY (SEEQ)

Students' Evaluations of Educational Quality (SEEQ)

From Herbert W. Marsh published April 1992. A longitudinal study over the same teacher over a 13 year period.

1. **Learning:** You found the course intellectually challenging and stimulating

2. You have learned something which you consider valuable

3. Your interests in the subject has increased as a consequence of this course

4. You have learned and understood the subject materials in this course

5. ***Enthusiasm:*** *Instructor was enthusiastic about teaching the course*

6. Instructor was dynamic and energetic in conducting the course

7. Instructor enhanced presentations with the use of humor

8. Instructors style of presentation held your interest during class

9. **Organization:** Instructors explanations were clear

10. Course materials were well prepared and carefully explained

11. Proposed objectives agreed with those actually taught so you knew where the class was going

12. Instructor gave lectures that facilitated taking notes

13. **Group Interaction**: Students were encouraged to participate in class discussions

14. Students were invited to share their ideas and knowledge

15. Students were encouraged to ask questions and were given meaningful answers

16 Students were encouraged to express their own ideas and/or question the instructor

17 **Individual Rapport:** Instructor was friendly toward individual students

18 Instructor made students feel welcome seeking help/advice in or outside of class

(SEEQ cont.)

19. Instructor had a genuine interest in individual students

20. Instructor was adequately accessible to students during offices hours or after class

21. **Breadth:** Instructor contrasted the implications of various theories

22. Instructor presented the background or origin of ideas/concepts developed in Class

23. Instructor presented points of view other than his/her own when appropriate

24. Instructor adequately discussed current developments in the field

25. **Examinations:** Feedback on examinations/graded materials was valuable

26. Methods of evaluating student work were fair and appropriate

27. Examinations/graded material tested course content as emphasized by the I instructor

28. **Assignments:** Required readings texts were valuable

29 Readings, homework, etc. contributed to appreciation and understanding of Subject.

30. **Overall:** Compared with other courses you have taken at USC this class was

31. **Overall:** Compared with other instructors you have had at USC this instructor was

Student and Course Characteristics: (Leave blank if applies)

32. Course difficulty relative to other was (1-very easy 3-medium 5-very hard)

33. Course workload relative to other courses was (1-very light 3-medium 5-very heavy)

34. Course pace was (1-Too slow 3-about right 5-Too fast)

35. Hours per week required outside of class 1) 0-2 2) 2-5 3) 5-7 4) 7-12 5) over 12

(SEEQ cont.)

36. Level of interest in the subject prior to this course (1-very low 3-medium 5-very high)

37. Overall GPA at USC 1) below 2.5 2) 2.5 to 3.0 3) 3.0-3.4 4) 3.4-3.7 5) above 3.7

38. Reason for taking the course (1-Major elective, 3- General ED. Require… 4- Minor/related field, 5- General interest only) Select the one which is best

39. Year in school 1) Fresh 2) Soph 3) JR. 4) SR 5) Grad

40. Expected Grade in Course (1-a 2-A- 3-B+ 4-B 5-B- 6-C+ 7-C 8-C- 9-D 10-F

41. Major department 1) Soc Sci/Comm 2) Nat Sci/Math 3) Humanities 4) Business 5) Education 6) Engineering 7) Perf Arts 8) Pub Affairs 9) Other 10) Undeclared/Undecided

APPENDIX E

ITEMS IN THE KOLB LEARNING STYLE INVENTORY

Items in the Kolb Learning Style Inventory

Directions: Rank the ending for each sentence from 1= least like you to 4=most like you.

When I learn:	__I like to deal with my feelings	__I like to watch and listen	__I like to think about ideas	__I like to be doing things
I learn best when:	__I trust my hunches and feelings	__I listen and watch carefully	__I rely on logical thinking	__I work hard to get things done
When I am learning:	__I have strong feelings and reactions	__I am quiet and reserved	__I tend to reason things out	__I am responsible about things
I learn by:	__Feeling	__Watching	__Thinking	__Doing
When I learn:	__I am open to new experiences	__I look all sides of issues	__I like to analyze things, break them down into their parts	__I like to try things out
When I am learning:	__I am an intuitive person	__I am an observing person	__I am a logical person	__I am an active person
I learn best from:	__Personal relationships	__Observation	__Rational theories	__A chance to try out and practice
When I learn:	__I feel personally involved in things	__I take time before acting	__I like ideas and theories	__I like to see results from my work
I learn best when:	__I rely on my feelings	__I rely on my observations	__I rely on my ideas	__I can try things out for myself
When I am learning:	__I am an accepting person	__I am reserved person	__I am a rational person	__I am a responsible person
When I learn:	__I get involved	__I like to observe	__I evaluate things	__I like to be active
I learn best when:	__I am receptive and open-minded	__I am careful	__I analyze	__I am practical

APPENDIX F

VIGNETTE TEMPLATES

Vignette Templates

Directions: The vignette below describes a typical first day in a college classroom. Please read the vignette very carefully, considering how you would feel about being in a class designed and structured like this. Consider what it would be like to be in a class like this throughout an entire semester, with special emphasis on the teaching style presented. Pay attention to the interactions of students, the teacher's classroom management skills, the criteria for completing the class. Once you have completed reading this section continue on to the questions below. Answer each item based on you honest appraisal of how comfortable you would be in this class for an entire semester.

Vignette #1: Presentational

It is the first day of the semester for a 9:00 a.m. class, and you find yourself in a classroom with thirty other students. At precisely 9:00, the professor enters the room and marches directly to the podium at the front. The professor directs the students to attend to the presentation. Then, he announces the course title and pronounces his name. He asks if anyone is in the wrong class, alerting students to possible location problems, and then states that those in the wrong class should leave now. Next, he announces his agenda for the day. First, he will cover the basics of the course syllabi and then proceed to a mini-lecture, in which students should take notes for the remainder of the class. He systematically calls the role by pronouncing each name out loud. Stopping to correct himself as needed. This is accomplished quickly and efficiently. He then proceeds to pass out the course syllabus. The syllabus is long and detailed. It gives vital classroom policy and procedure obviously meant to keep students from violating the rules. Exact dates for readings, objectives for each section and exam dates are all provided. The students are told his office number and telephone numbers. He emphasizes very specific office hours and instructions for messages. He proceeds to explain the nature of the course and his expectations. This class will be a lecture course. Students are required to take notes; all

questions should be carefully considered and presented formally. The information students receive will be a conglomeration of years of research and dedication the field. Assignment formats, attendance requirements, and exam policies are thoroughly outlined. Recitation will be a part of the class. He asks for questions, and immediately a student asks about the professor's type of exam questions. He replies that the information is presented in the syllabus and that students should pay attention to what is said in class so that time is not misspent reviewing the obvious. At this point, several students who also appeared to have questions shrink back into their seats and begin to scour the syllabi again. It becomes clear that student interaction is not welcome in this class; it will be all business. However, true to his word it is evident that everything that needs to be known about the class can be found in the syllabus. The professor begins to lecture about the philosophical beginnings of psychology. His lecture is precise, organized and filled with references. The students take diligent notes. At 9:50, he stops the lecture and assigns the next readings for the next class period.

Vignette #2: Initiatory

It is the first day of the semester for a 9:00 a.m. class, and you find yourself in a classroom with about thirty students. At 8:59, the professor enters the room and makes his way to the podium at the front of the class. The professor has carefully organized his notes and books before coming to class. He scans the class, smiles, and states, "good morning." He announces the name of the course and pronounces his name. Then, he states the day's agenda. First, he will call roll, and then he will cover basics of the course syllabi, answer questions, and then will proceed to interact with the students for the remainder of the class. He then pulls out the course roster and thoughtfully reads the

names. He dutifully corrects any mispronounced names. Once this task is accomplished he hands out the course syllabus. The students are immediately directed to his office number and his telephone numbers. Students are encouraged to adhere to the scheduled office hours because the professor is rarely available at other times. He proceeds to explain the nature of the course and his classroom expectations. Assignments, attendance, and exam policies are outlined. While talking about the assignments he is careful to discuss how each is related to possible test questions. Then the professor directs the students to the page on the syllabus describing the course objectives. He carefully reads each one and provides an example of what students should be alerted to when preparing for exams. He spends some time discussing the quality of the assigned papers, and timelines of student's participation in class, to which he suggests that some time will be allotted to ask questions. The competencies needed for each section is described. He asks for questions, and several students raise their hands. One student wishes to know the format of his exams. The professor smiles and casually replies that like he had just stated the exams will be multiple choice covering the lectures and the outside readings. He explains that he will provide time for exam reviews in which he will show students how to prepare and to allow them the opportunity for individual practice while getting feedback. Another student asks if the assignments can be conducted in groups. The professor immediately states that all work is to be at the individual level and that group work will be penalized accordingly. His goal is for students to demonstrate their own level of competence and mastery, not to practice their social skills. With no more questions, the professor then begins to recite the philosophical beginning of psychology. He continues to ask questions and reinforces all correct answers. If a student appears to

drift off, the professor stares at the student until they once again begins to pay attention. This continues for the remainder of the period. At ten minutes until he stops his lecture and announces to the students the importance of reading the next chapter for the next class period.

Vignette #3: Dialogic

It is the first day of the semester for a 9:00 a.m. class, and you find yourself in a classroom with about thirty other students. About 9:00, the professor enters the room and casually wanders about the room scanning the students. He finally makes it to the front of the class. The students have all visually followed the professor as he made his way about the room. By the time he makes his way to the front, all the students appear to be ready for the professor to speak. The professor takes a dramatic moment and asks the simple question, "What is psychology?" Several students raise their hands, some others begin to mumble their answers aloud, and yet others look away nervously. He merely smiles at them and again begins to wander about the front of the class, nodding at those who appear to be pondering his question. At last, he states that the students are in good company because this question has puzzled philosophers and psychologists for hundreds of years. Without answering the question, he welcomes everyone to the course. He pronounces his name. Then, he states his agenda for the day. It is his intention to cover the course expectations, which are outlined in the syllabi, and then he will proceed to large group discussion about his opening question. He scans the course roster and begins to call roll. With each name, he gazes at each person trying to associate the name and the face. He makes a point to ask each person a question. Some students appear to relish the opportunity to talk, while others fidget and respond quickly. Once this activity is

completed, he passes out the syllabi. The students are instructed to read the information carefully and to ask questions if something is unclear. The professor acknowledges that this syllabus is a foundation and that they as a group could make changes if needed. He tells the students his basic office hours and telephone numbers. He states that he welcomes students at all times, but to just to be sure to set an appointment in advance. He continues by explaining the nature of the course and his expectations. Learning in this class will be a collaborative process. Assignments, attendance, and exam policies are briefly outlined. He will expect that students work closely with one another, small group problem solving will be a routine part of class. Students will select goals and problems to solve. Throughout this time, students are asking him questions about tests, assignments and even his educational background. With each question he smiles and reframes the question and answers matter-of-factly. During this class, students are engaged in the conversations and asked their opinions, regarding the nature of this or that. He explains how case studies and problem-based learning will be utilized in the class. It is clear that student interaction is expected, and that the students will have to participate on a daily basis. Finally, with about 15 minutes remaining in class, he directs the students' back to the original question, "What is psychology." After a brief, but intense, dialog, he summarizes the discussion and provides a collective answer to the question. He points out how this strategy caused the students to construct their own learning for the question, and that by continually directing and redirecting the students they all arrived at a consensus answer to the general question that would please even the most intellectual of professors. He congratulates those that participated for their efforts and states that the others will be expected to open up and follow suit as the semester progresses. It is about five minutes to

10:00 so he stops his discussion and announces the topic for the next class period. He instructs the students to read ahead and to reread the course syllabus so that they might correct any inconsistencies.

Vignette #4: Student-Centered

It is the first day of the semester for a 9:00 a.m. class, and you find yourself in a classroom with about thirty other students. At about 9:00, the professor casually enters the room, looking at all of the students as he slowly makes his way to the front of the classroom. He carries nothing but a sheet of paper and a pencil. Once he arrives at the front of the class, he takes a seat and ponders aloud if the current class seating arrangement is conducive to good discussions. He immediately asks the students what they think about the arrangement. Moments later, several students are up and busily restructuring the classroom arrangement. Some students are actively involved, moving chairs and tables, directing, and making suggestions. Other students appear confused and offer little in support of changing the room structure. A few minutes later the class has been transformed into a circle with all chairs pointed inward. Pleased, the professor then asks if he is in the right class. A student laughingly announces the course name, and the professor nods in agreement. The professor rises, takes a moment, and begins to wander about the room nodding to each student. As he walks around, he announces his name and begins to discuss his personal teaching philosophy. Learning is an individual endeavor. As much as we like to think that teachers can make students learn, the actual task of learning rests firmly at the indivuidual level. He continues by stating his agenda for the day, to discuss the course expectations and then perhaps a small group assignment so that the students can get to know one another better. He asks for

questions. With no questions, he generally asks what the students want to learn from the class. A variety of answers ensue. Some just want A's; others want to learn, and others just want to be entertained. He patiently nods to the various answers, and ultimately sums up his question with an overview of the students' wants and needs. He states that each student will get what they want out of the class if they put the effort in to achieving thier goals. He states that it is his intention for student to be able to accomplish what they want in this class. His only concern is how the students plan to get what they need. He states that students will need to be self-directed and self-paced to accomplish their goals. Students will work primarily individually, but occasionally in large and small groups for the semester. Any exams and assignments will be decided upon by the students' at the individual level. They will demonstrate their needs for learning and then demonstration of their mastery of that material. The professor's role will be to serve as a facilitator of information. Hopefully, students will seek out answers to their questions. He again asks for questions. One student asks for a syllabus. He states that he does not have one yet, but a syllabus is a good idea and ponders that each individual should create their own. The class murmurs a bit, some students incredulous, others somewhat perplexed. He goes on to state that students need to determine their own objectives, once this is done they can negotiate them with him. He emphasizes that some students will need different materials to accomplish their goals or interests than others. Students will progress at differing rates, some will be able to go broader, deeper and/or faster dependent on their articulated needs. Confusion is sensed in the class. "What about tests?" asks one student. Tests will be constructed as students see the need to demonstrate what they have mastered in their objectives. Times and

dates and questions are negotiable. This causes a burst of questions. Students begin to talk about the possibilities of taking only a couple of tests, or perhaps one test, or even taking no tests. The professor waits patiently, nodding to the various comments here and there, finally he states that the only requirement is that students demonstrate they have learned what they said they would learn by the end of the semester. The students continue to ask questions until, ten until 10:00. He stops and states that he forgot to take roll, so he tells them to sign the sheet of paper he has on their way out of class. He wishes them, "good day", tells them to devise a set of semester goals in which to form objectives and dismisses class to a buzz of activity.

APPENDIX G

THE ORIGINAL AND REVISED PSYCHOLOGICAL REACTANCE SCALE

The Original and Revised Psychological Reactance Scale

1=Strongly disagree
2=Disagree
3=Neither agree nor disagree
4=agree
5=Strongly agree

Psychological Reactance-Original

1. Regulations trigger a sense of resistance in me.
2. I find contradicting others stimulating.
3. When something is prohibited, I usually think, "that's exactly what I'm going to do."
4. The thought of being dependent on others aggravates me.*
5. I consider advice from others to be an intrusion.
6. I become frustrated when I am unable to make free and independent decisions.
7. It irritates me when someone points out things, which are obvious to me.
8. I become angry when my freedom of choice is restricted.
9. Advice and recommendations induce me to do just the opposite.
10. I am content only when I am acting of my own free will.*
11. I resist the attempts of others to influence me.
12. It makes me angry when another person is held up as model for me to follow.
13. When someone forces me to do something, I feel like doing the opposite.
14. It disappoints me to see others submitting to society's standards and rules.*

*Items that are deleted in the revised 11-item scale

Note: Items 6, 8 & 7 equate to the "emotional response toward restricted choice" factor; 1, 2 &3 equate to the "reactance to compliance" factor; 11, 12 &13 equate to the "resisting influence from others" factor; 5 & 9 equate to the "reactance toward advice and recommendations" factor.

Psychological Reactance-Revised

1=Strongly disagree
2=Disagree
3=Neither agree nor disagree
4=agree
5=Strongly agree

1. The regulations in this class would trigger a sense of resistance in me.
2. The level of contradicting others in this class would be stimulating.
3. If something in this class was prohibited, I would think, "that's exactly what I'm going to do."
4. The thought of being dependent on the professor and students in this class aggravates me.
5. I would consider advice from the professor in this class to be an intrusion.
6. Being able to make free and independent decisions in this class would make me frustrated.
7. In this class it would irritate me when the professor pointed out things, which are obvious to me.
8. In this class I would become angry because my freedom of choice is restricted.
9. Advice and recommendations from this professor would induce me to do just the opposite.
10. In this class I would be content only when I was acting of my own free will.
11. I resist the attempts of other students in this class to influence me.
12. I become angry when the professor in this class is held up as a model for me to follow.
13. If the professor of this class forces me to do something, I will feel like doing the opposite.
14. It would disappoint me to see others submitting to this classes' standards and rules.
15. I would probably perform lower than my ability in this class.†
16. I would consider dropping out of this class.†
17. I would challenge the professor and students in this class at every opportunity.†

† Additional items.

APPENDIX H

INSTRUMENT

Teaching and Learning Style Study

This study is being done as part of an investigation entitled the "The Effects of Teaching Style and Student Learning Style on Psychological Reactance." The purpose of this procedure is to investigate the interaction between teaching styles and student learning style preferences. Upon your consent you will be asked to fill out a few basic questions about yourself and answer some questions in regard to teaching style.

Please note that at no time will you be identified in this process. Your particiaption is voluntary and your grade will in no way be influenced by your participation. Do not indicate your name on the packets or the scantron forms.

There are three sections in this data collection process. First, you will answer some basic demographic questions. Next, you will be asked to complete some items that descibe your preferences for learning. There are 12 items in this task. This stage has some simple computations that need to be made, so I will provide some oral instructions to help expedite the process. Upon completion of this portion of the study you will have determined one of four learning preferences that suit you best.

You will then be directed to the front of the class where you will find four stacks of packets. Each stack will be labeled as one of the four possible learning styles. You will simply pick up the packet that correspondes to your learning style. This is the third portion of the study. When you return to your seat, read very carefully the vignette describing a specific teaching scenerio. Answer each of the items that follow the vignette as they would apply to your perceptions of that classroom experience. Once this is completed, please wait for the rest of the class to finish, and the study is complete.

The entire process should take 40 to 50 minutes. Your answers are very important in the study of teaching and learning in the realm of higher education. The findings will be presented before a board of psychologists and educational experts, so your honest forthright answers are much appreciated and needed. There are no incorrect answers, it is based on your honest appraisal of the situations presented.

Please read and sign the white consent form now. Understand that your participation is voluntary, that there is no penalty for refusal to participate, and that you are free to withdraw your consent and participation in this project at any time without penalty after notifying the project director. Your participation and signature will be considered your consent to participate. If you have any questions please ask them now.

Please Stop Until Directed to Continue

SECTION I.

Directions: Please indicate the answer to all questions from this packet directly on the answer sheet provided. Use a number 2 pencil and make the marks dark so that they will be picked up by the scantron machine. If you make changes to your answers, please ensure that you erase completely. Do not write your name on the scantron form. Do not write on this packet. Once you have completed this section, please put your pencils down and review your answers to ensure that you have answered the appropriate number of items to this point and that there are no foreign markings that could be miscoded. Please remain quiet so others will not be disturbed.

1. Gender: A. Male B. Female

2. Classification:	3. Race:	4. Age group:
A. Freshman	A. African American	A. 19 or less
B. Sophomore	B. Hispanic	B. 20-24
C. Junior	C. Native American	C. 25-29
D. Senior	D. Caucasian	D. 30-34
E. Graduate student	E. Other	E. 34 or more

For items 5 through 19 please use the following rating scale…

A=*Strongly Disagree* B=*Disagree* C=*Neither Agree Nor Disagree* D=*Agree* E=*Strongly Agree*

5. Regulations trigger a sense of resistance in me.
6. I find contradicting others stimulating.
7. When something is prohibited, I usually think, "that's exactly what I'm going to do."
8. The thought of being dependent on others aggravates me.
9. I consider advice from others to be an intrusion.
10. I become frustrated when I am unable to make free and independent decisions.
11. It irritates me when someone points out things, which are obvious to me.
12. I become angry when my freedom of choice is restricted.
13. Advice and recommendations induce me to do just the opposite.
14. I am content only when I am acting of my own free will.
15. I resist the attempts of others to influence me.
16. It makes me angry when another person is held up as model for me to follow.
17. When someone forces me to do something, I feel like doing the opposite.
18. It disappoints me to see others submitting to society's standards and rules.
19. Compared to other college students, I consider myself to be a good student.

Stop Until Directed to Continue (Please Review your Answers)

SECTION II.

Directions: In this section you will determine your learning style preference. In the packet of materials you received there are 3 white pages containing a Learning-Style Inventory, a Learning-Style Type Grid, and the Four Learning-Style Types. This is yours to keep and you will need to write your answers on these sheets. Do not utilize the scantron form at this time. In completing this inventory there are no right or wrong answers. All learning strengths are equally valuable, this is designed only to indicate your preference for learning. For each stem there are 4 possible answers.

Please rank order each item so that; 4=the most like you, 3=second most like you, 2=third most like you, and 1=least like you (see the board). There will be no ties, so each sentence completion will get a whole value of 1 to 4. Please take your time. When you are done please look up.

OK, now you will notice that there are four columns, please sum each column. Now copy the value you acquired to the designated location on the following page. The total value of column 1 will go in the box denoted CE, the total value in column 2 will go in the box designated RO, the total value in column 3 will go in the box denoted AC, and the total value in column 4 will go in the box designated AE. When you are finished simply subtract the CE from the AC score and the RO from the AE score. This will yield two combination scores, AC-CE and AE-RO. Please pause for a moment until directed to continue, you may wish review your computations now.

Notice the grid below. The numbers on the lines range from negative to positive. Note that the negative values are on the RO and CE sides. Now take your AC-CE score and plot it on the vertical axis of the grid below (be sure that you have the correct sign). Next take the AE-RO score and plot it on the horizontal axis (make sure the sign is correct). Now by plotting the point of interception you will find your learning style classification. If you have any question please ask them now.

For Item #20 on your scantron please indicate your learning style as follows:

A=Assimilator
B=Converger
C=Accommodator
D=Diverger

Please Stop Until Directed to Continue.
(Review your calculations while you wait and make sure that you have designated your learning style on your scantron #20)

SECTION III. Vignette A

Directions: The vignette below describes a typical first day in a college classroom. Please read the vignette very carefully, considering how you would feel about being in a class designed and structured like this. Consider what it would be like to be in a class like this throughout an entire semester, with special emphasis on the teaching style presented. Pay attention to the interactions of students, the teacher's classroom management skills, and the criteria for completing the class. Once you have completed reading this section continue on to the questions below. Answer each item based on you honest appraisal of how you would perceive being in this class for an entire semester.

Before proceeding please indicate the vignette letter "A" on your scantron for Item #21.

(VIGNETTE TEXT PLACED HERE)

For items 22 through 44 please use the following rating scale.

A=***Strongly Disagree*** B=***Disagree*** C=***Neither Agree Nor Disagree*** D=***Agree*** E=***Strongly Agree***

22. The regulations in this class would trigger a sense of resistance in me.
23. The level of contradicting others in this class would be stimulating.
24. If something in this class was prohibited, I would think, "that's exactly what I'm going to do."
25. The thought of being dependent on the professor and students in this class aggravates me.
26. I would consider advice from the professor in this class to be an intrusion.
27. Being able to make free and independent decisions in this class would make me frustrated.
28. In this class it would irritate me when the professor pointed out things, which are obvious to me.
29. In this class I would become angry because my freedom of choice is restricted.
30. Advice and recommendations from this professor would induce me to do just the opposite.
31. In this class I would be content only when I was acting of my own free will.
32. I would resist the attempts of other students in this class to influence me.
33. I would become angry if the professor in this class was held up as a model for me to follow.
34. If the professor of this class forced me to do something, I would feel like doing the opposite.
35. It would disappoint me to see others submitting to this classes' standards and rules.
36. I would probably perform lower than my ability in this class.
37. I would consider dropping out of this class.
38. I would challenge the professor and students in this class at every opportunity.
39. I would find this course intellectually challenging and stimulating.
40. The instructor was enthusiastic about teaching the course.
41. The instructors explanations were clear.
42. Students were encouraged to participate in class discussions.
43. The instructor was friendly toward individual students.
44. The methods of evaluating student work seem fair and appropriate.

Directions: For the items 45-48 use the specific choices provided.

A=Very Easy **B**=Easy **C**=Medium **D**=Hard **E**=Very Hard

45. Compared with other courses you have taken this class would be
46. Compared with other instructors you have had this instructor would be
47. Compared to other courses this course' level of difficulty would be
48. From what you have read the course workload in this case relative to other courses would be
49. My level of interest in this subject would be…

A=Very Low **B**=Low **C**=Medium **D**=High **E**=Very High

50. Based on what I have read my expected grade in this course would be…
    A, **B**, **C**, **D**, F (**E** on scantron)

APPENDIX I

ORAL SOLICITATION AND CONSENT FORM

Oral Solicitation and Consent Form

Hello and welcome! My name is Wayne McMillin and I am the principle investigtor for a study that I am about to describe to you. First off thank you for you cooperation and the cooperation of your class instructor. Before we get started I would like to describe the study by giving you some background information and some general ideas as to what to expect.

This study is being done as part of an investigation entitled the "The effects of teaching style and student learning style on psychological reactance." The purpose of the procedure is to investigate the interaction between teaching styles and student learning style preferences. Upon your consent you will be asked to fill out a few basic questions about yourself. Please note that at no time will you be identified. Your particiaption if voluntary and your grade will in no way be influenced by your participation. Do not indicate your name on any of the paperwork that you receive. You will then be asked to complete some items that descibe your preferences for learning. There are 12 items in this task and you should be finished in about 1O minutes. When you finshed this portion of the study you will find one of four learning preferences that suit you best, at this time you will be directed to the front of the class where you will find four stacks of packets. Each stack will be labeled as one of the four possibnle learning styles. Hand in your answer sheet and take the packet of information labeled by your learning style. Return to your seat and continue the study.

The packet you obtain will have a short narrative describing a typical first day in a college classroom, please read it carefully and continue on. There are a series of items to complete in regard to the vignette you have read. Once this is completed please bring you materials to the front of the room and obtain a learning style overview. The entire process should take 30 to 45 minutes. Once again do not indicate your name on any of the materials. Understand that participation is voluntary, that there is no penalty for refusal to participate, and that are free to withdraw your consent and participation in this project at any time without penalty after notifying the project director. Your participation will be considered your consent to participate.

For questions or concerns you may contact me at telephone number 580-213-3116. Or you may also contact Gay Clarkson, IRB Executive Secretary, 203 Whitehurst, Oklahoma State University, Stillwater, OK 74078; telephone number: (405) 744-5700. If you do not fully understand this participation and consent statement. Please raise your hand and I will restate it for you. Once again thanks for you help.

Informed Consent Form

I understand that my participation in this study is voluntary. I understand my rights as a subject, that my responses will be held confidential, and that my grade in this class will not be influenced by my participation. I have been fully informed of the nature of the study and agree to participate in this study.

Name: _____ Date: _____

APENDIX J

IRB APPROVAL FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD

DATE: 11-19-98 **IRB #: ED-99-045**

Proposal Title: THE EFFECTS OF TEACHING STYLE AND LEARNING STYLE ON PSYCHOLOGICAL REACTANCE

Principal Investigator(s): Kay Bull, Wayne McMillin

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

Signature: Carol Olson Date: November 19, 1998

Carol Olson, Director of University Research Compliance
cc: Wayne McMillin

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modification to the research project approved by the IRB must be submitted for approval. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

VITA

Wayne L. McMillin

Candidate for the Degree of

Doctor of Philosophy

Thesis: LEARNING STYLE AND TEACHING STYLE INTERACTION AND THE EFFECT ON PSYCHOLOGICAL REACTANCE

Major Field: Applied Behavioral Studies in Education

Biographical:

Personal Data: Born in Norfolk, Virginia, on December 18, 1964, the son of James and Ophelia McMillin. Married to Lori Ann McMillin. Two children: Meghan and Keegan.

Education: Graduated form Aline-Cleo High school, Aline, Oklahoma in May 1983; received a Bachelor of science degree in Psychology from Northwestern Oklahoma State University, Alva, Oklahoma in May 1988. Completed a Masters of Arts degree in Experimental Psychology at the University of Central Oklahoma, Edmond, Oklahoma, May 1994. Completed the requirements for the Doctor of Philosophy in Educational Psychology at Oklahoma State University, Stillwater, Oklahoma, May 1999.

Experience: Worked as a case manager for the mentally ill in Okemah, Oklahoma and Oklahoma City, Oklahoma from 1988 to 1989. Continued employment as a statistician/ manager for Omni Corporation at the Federal Aviation Administration in Oklahoma City, Oklahoma. Began teaching as adjunct Psychology instructor 1994 at Oklahoma City Community College and as a graduate student at Oklahoma State University that same year. Currently full-time employment as an Assistant Professor of Psychology at Northwestern Oklahoma State University, in Enid, Oklahoma, beginning the Fall 1997 semester.