1996

Nursing Student and Faculty Perceptions of Clinical Post-Conference Learning Environments

Marijo Letizia
Loyola University Chicago

Follow this and additional works at: https://ecommons.luc.edu/luc_diss

Part of the Education Commons

Recommended Citation
Letizia, Marijo, "Nursing Student and Faculty Perceptions of Clinical Post-Conference Learning Environments" (1996). Dissertations. 3569.
https://ecommons.luc.edu/luc_diss/3569

This Dissertation is brought to you for free and open access by the Theses and Dissertations at Loyola eCommons. It has been accepted for inclusion in Dissertations by an authorized administrator of Loyola eCommons. For more information, please contact ecommons@luc.edu.

This work is licensed under a Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License.
Copyright © 1996 Marijo Letizia
LOYOLA UNIVERSITY CHICAGO

NURSING STUDENT AND FACULTY PERCEPTIONS OF
CLINICAL POST-CONFERENCE LEARNING ENVIRONMENTS

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE GRADUATE SCHOOL
IN CANDIDACY FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
DEPARTMENT OF CURRICULUM, INSTRUCTION, AND
EDUCATIONAL PSYCHOLOGY

BY
MARIO LETIZIA

CHICAGO, ILLINOIS
JANUARY, 1996
ACKNOWLEDGEMENTS

I would like to express my appreciation to the members of my dissertation committee, Dr. Carol Harding, Dr. Martha Ellen Wynne, and Dr. Judi Jennrich. Their expert guidance and assistance throughout this learning process has contributed greatly to this product. I would also like to extend my gratitude to members of the School of Nursing faculty at Loyola University who have provided me with invaluable support and encouragement, especially Karyn Holm, Vicki Keough, Mary Ann Noonan, Sue Penckofer, and Marybeth Young. Additionally, I sincerely thank Tammy Dee Jones and Tom Schaefer who have耐心ly provided me with expert technical assistance in the reporting of this research.

This dissertation is dedicated to my husband Dave and our children, Michael, Kate Rose, and Tim. Your patience, tolerance, and understanding have been remarkable. I love you.
TABLE OF CONTENTS

ACKNOWLEDGEMENTS ........................................ iii

LIST OF FIGURES ........................................... ix

LIST OF TABLES ............................................. x

Chapter

I. INTRODUCTION ........................................... 1

   Introduction to the Topic ................................ 1

   Theoretical Framework .................................... 2

   Overview of Environmental Psychology ..................... 2

   Lewin’s Field Theory ..................................... 7

   Murray’s Need-Press Model ................................. 11

   Stern’s Refinement of the Need-Press Model ................ 13

   Moos’ Classification Scheme of Environmental Dimensions .. 17

   Perceptual Measures in Classroom Environment Research .... 20

II. REVIEW OF THE LITERATURE ............................. 24

   Review of Related Literature: The Learning Environment ... 24

   Overview of Learning Environment Instruments .............. 24

       Measurement issues related to learning environment
       instruments ............................................. 24

       Development of the instruments .......................... 26

       Instrument forms: actual and ideal ........................ 26

       Research applications ................................... 27

   The Classroom Environment Scale (CES) ..................... 29
Introduction to the instrument .......................... 29
Factor analysis studies ............................... 31
Research applications ............................... 32
The Learning Environment Instrument (LEI) ............... 36
Introduction to the instrument ......................... 36
Research applications ............................... 38
My Class Inventory (MCI) ............................ 41
Individualized Classroom Environment Questionnaire (ICEQ) 42
Introduction to the instrument ......................... 42
Research applications ............................... 43
Additional Learning Environment Instruments ............. 44
Person-Environment Fit Paradigm ....................... 45
Aptitude Treatment Interaction (ATI) Paradigm ............. 47
Actual-Preferred Learning Environment Congruence ........... 49
Student-Teacher Discrepancy Regarding the Learning Environment .......................................................... 52
Learning Environment Instruments as Feedback Mechanisms .... 55
Conclusions Regarding Learning Environment Research .... 58
Review of Related Literature: Clinical Post-Conference .......... 61
Research Questions ........................................ 66
III. METHODS ............................................. 69
Design .................................................... 69
Subjects .................................................. 69
Differences between Student and Faculty Perceptions of Actual and Importance Subscales ................................. 96

Differences between Junior Nursing Students and Senior Nursing Students Perceptions of Actual and Importance Subscales .................. 102

Analysis of Post-Conference Descriptors by Faculty ...................... 111

V. DISCUSSION ................................... 114

Psychometric Research Question Findings ............................... 114

Suggestions for Instrument Improvement .................................. 115

Content Research Question Findings ..................................... 117

Student and Faculty Perceptions of the Learning Environment .......... 117

Differences between Actual and Importance Perceptions of the Learning Environment ........................................... 121

Difference between Student and Faculty Perceptions of the Learning Environment ............................................ 123

Difference between Junior Nursing Students and Senior Nursing Students Perceptions of the Learning Environment .................. 125

Summary of Differences between the Participant Schools .............. 127

Faculty Descriptors of Post-Conference Findings ........................ 129

General Implications of Findings ..................................... 129

Recommendations for Future Research ................................ 132

Appendix

A. ASSESSMENT OF CONTENT VALIDITY ............................... 136

B. CLINICAL POST-CONFERENCE LEARNING ENVIRONMENT SURVEY .............................................. 144

C. FACULTY DESCRIPTORS OF POST-CONFERENCE ..................... 151
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A Comparison of Student and Faculty Perceptions of Actual Teacher</td>
<td>99</td>
</tr>
<tr>
<td>Support, Task Orientation, and Innovation</td>
<td></td>
</tr>
<tr>
<td>2. A Comparison of Student and Faculty Perceptions of Actual Order</td>
<td>101</td>
</tr>
<tr>
<td>and Organization by Schools</td>
<td></td>
</tr>
<tr>
<td>3. A Comparison of Student and Faculty Perceptions of the Importance</td>
<td>102</td>
</tr>
<tr>
<td>of Innovation by Schools</td>
<td></td>
</tr>
<tr>
<td>4. A Comparison of Junior Students and Senior Students Perceptions of</td>
<td>105</td>
</tr>
<tr>
<td>Actual Involvement</td>
<td></td>
</tr>
<tr>
<td>5. A Comparison of Junior Students and Senior Students Perceptions of</td>
<td>105</td>
</tr>
<tr>
<td>Actual Cohesion</td>
<td></td>
</tr>
<tr>
<td>6. A Comparison of Junior Students and Senior Students Perceptions of</td>
<td>106</td>
</tr>
<tr>
<td>Actual Teacher Support</td>
<td></td>
</tr>
<tr>
<td>7. A Comparison of Junior Students and Senior Students Perceptions of</td>
<td>106</td>
</tr>
<tr>
<td>Actual Task Orientation</td>
<td></td>
</tr>
<tr>
<td>8. A Comparison of Junior Students and Senior Students Perceptions of</td>
<td>107</td>
</tr>
<tr>
<td>Actual Order and Organization</td>
<td></td>
</tr>
<tr>
<td>9. A Comparison of Junior Students and Senior Students Perceptions of</td>
<td>108</td>
</tr>
<tr>
<td>Actual Innovation by Schools</td>
<td></td>
</tr>
<tr>
<td>10. A Comparison of Junior Students and Senior Students Perceptions of</td>
<td>109</td>
</tr>
<tr>
<td>the Importance of Order and Organization by Schools</td>
<td></td>
</tr>
<tr>
<td>11. A Comparison of Junior Students and Senior Students Perceptions of</td>
<td>110</td>
</tr>
<tr>
<td>the Importance of Innovation by Schools</td>
<td></td>
</tr>
<tr>
<td>12. A Comparison of Junior Students and Senior Students Perceptions of</td>
<td>111</td>
</tr>
<tr>
<td>the Importance of Task Orientation by Schools</td>
<td></td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demographic Characteristics of the Student Samples</td>
<td>71</td>
</tr>
<tr>
<td>2. Demographic Characteristics of the Faculty Samples</td>
<td>72</td>
</tr>
<tr>
<td>3. Conceptual Framework: Clinical Post-Conference Learning Environment Survey</td>
<td>73</td>
</tr>
<tr>
<td>4. Mean Levels of Subscale Scores and Standard Deviations by School</td>
<td>83</td>
</tr>
<tr>
<td>5. Reliability Estimates of Clinical Post-Conference Learning Environment Survey</td>
<td>86</td>
</tr>
<tr>
<td>6. Ranked Frequency Distributions of Actual Subscale Scores: Student</td>
<td>90</td>
</tr>
<tr>
<td>7. Ranked Frequency Distributions of Actual Subscales Scores: Faculty</td>
<td>90</td>
</tr>
<tr>
<td>8. Ranked Frequency Distributions of Importance Subscales Scores: Student</td>
<td>91</td>
</tr>
<tr>
<td>9. Ranked Frequency Distributions of Importance Subscale Scores: Faculty</td>
<td>91</td>
</tr>
<tr>
<td>11. Paired t-tests Between Perceptions of Actual Subscales and Perceptions of Importance Subscales: School A</td>
<td>94</td>
</tr>
<tr>
<td>12. Paired t-tests Between Perceptions of Actual Subscales and Perceptions of Importance Subscales: School B</td>
<td>95</td>
</tr>
<tr>
<td>13. Paired t-tests Between Perceptions of Actual Subscales and Perceptions of Importance Subscales: School C</td>
<td>96</td>
</tr>
</tbody>
</table>
14. Test of Significant Differences between Student and Faculty Perceptions of Importance Subscales ................. 100

15. Test of Significant Differences between Junior Students and Senior Students Perceptions of Importance Subscales .......... 107

16. Ranking of Post-Conference Activities by Faculty .................. 113
CHAPTER I

INTRODUCTION

Introduction to the Topic

The goal of undergraduate baccalaureate nursing education is to prepare nursing students to function as competent registered nurses in the health care workforce. The educational process involves both classroom didactic courses and clinical laboratory experiences. During the clinical component of the program, individual nursing faculty are placed with a group of eight to ten nursing students who provide direct nursing care to selected clients in the clinical setting. Following this experience, the clinical group meets at the end of the day for what is referred to in nursing education as "post-conference". Clinical post-conference is an integral component of the required clinical laboratory hours in undergraduate nursing education, and is utilized for the purpose of learning.

Undergraduate nursing educators grapple with curriculum issues in an effort to maintain accreditation status and produce well-qualified, competent graduates for today's practice settings. Nursing educators throughout the country continue the practice of post-conferencing without empirical evidence supporting the process and/or outcome of this activity. While many authors have published ideas, techniques, and opinions regarding the use of post-conference time in nursing education, there is a fundamental lack of data-based research regarding this issue. A thorough review of the literature exposes only one research-based article related to
The central construct of this study is the learning environment, defined for this research as: "the social and organizational atmosphere that accompanies the interactions and communications between members of a learning group". 

Theoretical Framework

Overview of Environmental Psychology

In its broadest sense, the discipline of psychology involves the explanation, prediction and control of human behavior. To that end, psychologists examine the components of behavior and the processes that affect behavior. One focus in the
scientific study of behavior, the "interactionist" perspective, views behavior as the 
response of the individual to the forces generated within the individual's environment. 
The generic term representing the study of the interrelations between organisms and 
their environment is "ecology". In the study of ecology, the environment is defined 
as the external forces to which individuals react or respond (Stokols, 1977, p. 7). As 
such, the environment is seen as multidimensional, and as having an impact on 
behavior by the influences it has on the life that exists within it. The environment 
provides a continual source of actual and potential stimulus demands and 
consequences. It consists of the people, institutions, situations, tasks, rewards, and 
penalties as well numerous factors of physical and biological significance. In the 
exchange between the individual and the environment, both give to each other and 
both are affected to some degree by the exchange.

The discipline of environmental psychology is a branch of psychology 
concerned with the mutual relationship between human behavior and environmental 
settings (Russell, 1982). Within this field, there is emphasis on human adaptation to 
the physical resources in the environment, as well as emphasis on the interpersonal 
processes that mediate the impact of the environment on behavior. Environmental 
psychologists hold a "transactional view" of the individual and the environment, 
conceptualizing the reciprocal effects of people and milieu (Stokols, 1978).

Moos & Insel (1974, p. ix) highlight three assumptions operant in 
environmental psychology: 1) human behavior cannot be understood apart from the 
environment in which it finds its expression, 2) the physical and psychosocial
environment must be studied together because neither can be fully understood without the other, and 3) the value orientation of environmental psychology is apparent in the quest for knowledge that can promote maximally effective human functioning.

In their second assumption, Moos and Insel (1974) contend that both the physical and psychosocial environment must be studied together. Barker (1974, p. 247) delineates these two components of the environment as well, but cautions that each first must be identified and understood independently of the behavior with which it is linked. Barker outlines three alternatives for the study of environment: 1) the inclusion of inanimate physical features of the environment alone, with the exclusion of behavior within the environment, 2) the inclusion of the influence of the network of social roles within the environment on behavior, and 3) the inclusion of what he calls the "behavior setting unit", which encompasses both physical components of the environment and overt behaviors of individuals within that environment. Barker believes that it is within the behavioral setting that human behavior must be examined.

In Moos and Insel’s (1974) third assumption, environmental psychology strives to promote maximal human functioning within the environment. Scientists within this discipline are involved in the design of physical and social systems that will enhance human growth and that will facilitate effective human functioning. In this light, Stokols (1977, p. 25) outlines his notion of "human-environment optimization" as the mechanism that guides an individual or group interaction within the environment. The optimization cycle consists of the following processes: orientation, operation, and evaluation. In each of these processes, attention must be given to the aspects of the
existing environment as perceived by individuals within the environment, and to the
disparity of those perceptions to perceived optimal conditions of the environment.
Moos (1974b, p. 25) notes that the optimal arrangement of environments is a
powerful technique for behavioral modification. Psychologists and other behavioral
scientists can have an influential role in predicting the effects of environmental
changes on human behavior.

In order to attend to perceived environment conditions, it is essential to first
conceptualize and determine appropriate environmental assessment procedures. Moos
(1973) notes six appropriate approaches to the physical and psychosocial human
environment in accordance with the previously outlined issues: 1) determine
dimensions of the environment’s geographical–meteorological and architectural–
physical variables, 2) determine the environment’s behavior settings as outlined by
Barker, noting both ecological and behavioral properties of the setting, 3) note
dimensions of the environment organizational structure, 4) note the personal
characteristics of the inhabitants of the environment, 5) note dimensions related to
psychosocial characteristics of the environment, and 6) note variables relevant to the
functional or reinforcement behaviors of the inhabitants of the environments. Moos
regards these six categories as nonexclusive, overlapping, and mutually interrelated.

Pielstick (1988) has more recently explored the concept of classroom
environment within the school setting, emphasizing the thought that the observed
behavior of students is an external indicator of internal changes that have occurred in
their competencies and dispositions. Although the measurement of classroom learning
does not take into account the effects of more distal environments such as the family, the community, and culture, Pielstick supports a distinct research focus on conditions within the classroom, as they are intentionally provided to foster learning. In a recent meta-review of variables related to learning, Wang, Haertel, and Walberg (1990) established that distal policy variables are less important to learning outcomes than the characteristics of the instructional environment, home environment, and student characteristics. Classroom conditions are not only seen as influential determinants of learning, but are also conceived as being amenable to change in order to enhance learning.

Pielstick outlines four environmental domains similar to those outlined by Moos as related specifically to the educational setting. The physical domain is seen as having a capacity to interfere with or enhance learning, but this domain is not capable of producing learning. The social domain is seen as a critical component of both individual and group learning. The instructional domain contains the materials and plans for the educational process. The psychological domain, which is thought to be incorporated into the other domains, involves psychological constructs related to learning. As in Moos' proposition, none of these four domains are discreet or independent.

When addressing pertinent issues of environmental psychology, it is noteworthy that the continuous relationship between the individual and the environment has not been a historic focus in the discipline of psychology. Early behavioral theories by Pavlov and Watson emphasized the recording of observable
behavior and the stimuli that impact behavior without acknowledgment of the mental processes that mediate behavior. The operant conditioning theories of Thorndike, Skinner, and Hull used reinforcement and punishment procedures to shape behavior. These theorists viewed the external environment as stimulus provision that can mediate behavior. In this way, operant conditioning theories contributed to the interactionist perspective of psychology. Piaget, as a cognitive development theorist, viewed behavior as a consequence of both the individual's cognitive development and the individual's interaction with the environment. The social learning theories, such as that outlined by Bandura, highlight the importance of observation and modeling in behavior. In this light, Watson, Rotter and Tolman were psychologists who focused on both personal and environmental components of behavior. Imperative in these views was the notion that the individual's interpretation of the environment has critical influence on behavior. Field theorists, such as Lewin, emphasize the interaction of forces within and outside of the individual in the explanation, prediction, and control of human behavior.

Lewin's Field Theory

The theoretical framework for this study is provided by Lewin's (1936) field theory of behavior, represented as $B=f(P,E)$. Lewin postulated that behavior ($B$) is a function ($f$) of both the state of the person and the state of the environment ($P,E$) in which the person exists. In the treatment of individual psychology, Lewin acknowledged the constellation of coexisting and interdependent factors of persons and environments in the influence of behavior. He conceived of a "life space"; a
dynamic psychological field containing the particular person and the psychological environment as it exists for the person. Lewin regarded the life space as a "total of possibilities", where individuals experience both mental events and outward behaviors. Lewin conceived the life space of a group as consisting of both the group members and the psychological environment that exists for the group. He believed that the life space of the individual (or group) must be examined in order to analyze behavior.

Lewin explained individual differences in behavior as resulting from the attributes and contributions of both persons and the environments in which they exist. With this conception, Lewin found it essential that persons and environments be represented in common terms. His call for psychologists to consider the broader determinants of behavior within a single independent field was a great contribution to the discipline of psychology.

Lewin’s field theory is seen an outgrowth of the both the physical sciences and gestalt psychology (Moos, 1976, p. 19). Lewin rejected the behavioral explanations of behavior as simple fragmented responses correlated with manufactured stimuli. Instead, Lewin viewed behavior as a function of the individual’s perceptual field as a whole. He characterized the psychological field (Lewin, 1951 p.241) as inclusive of the individual’s goals, needs, and social relations as well as the more general characteristics of the atmosphere. To understand human behavior, Lewin considered a wide realm of determinants interacting within a single independent field.
A basic tenet of Lewin’s field theory is that the field in which the individual functions must be described in the way in which it exists for that person at the time setting. Lewin (1936, p. 25) proposed the notion that each individual’s perception of a situation provides the basis for what that individual defines as reality. Additionally, Lewin thought it necessary to take into account the ways a group views its own situation in order to predict group behavior. As such, Lewin believed that the situation must be represented in the way in which it is real to the individual and as it affects the individual. Lewin postulated that behavior is not dependent on the psychological past or on the psychological future, but rather on the perceptions of the present field. However, he conceived of the psychological present field as having a certain time depth which includes the past, the present, and the psychological future.

Criticism of Lewin’s field theory stems from the fact that his system is one built entirely of psychological constructs. Although Lewin’s field theory highlights the multitude of both individual and environmental factors influencing behavior, Lewin did not include nonpsychological environmental components in his theoretical framework. It is clear, nevertheless, that ecological conditions and events can impact behavior, and that this impact cannot and should not be excluded from the life space or psychological field. (Moos, 1976, p. 21)

Lewin’s field theory is believed to have been initiated in an effort to promote research in psychology that emphasizes the functional relationships and interactional states involved in behavior (Stern, 1958). Research designs using the field theory incorporate the life space and can represent changes of both persons and
environments. Lewin's theory provides the framework for an exploration of the possibilities within the life space. He left it to the researcher to develop constructs and techniques of observation and measurement adequate to characterize the properties of any given life space at any given time, and to state the laws governing the changes of these properties.

In stressing the importance of situations and personal variables as joint determinants of behavior, Lewin, Lippitt, and White (1939) conducted a classic study of the impact of group social climate. These researchers were interested in the differential effects of authoritarian, democratic, and laissez-faire leadership styles on the behavior and group climate of four group clubs each consisting of five 10-year old boys. The researchers matched the groups to control for individual differences and rotated the leaders to control for treatment variations. The following components of the groups were recorded: 1) the personal interactions among the members of each group, 2) the interactions of the leader with the group members, 3) overt expressions of aggression, and 4) the productivity of group projects. The results demonstrated that the behavior of the same boys changed markedly depending on the social or leadership climate of the group. Specific research findings included: 1) aggressive behavior is either very high or very low with autocratic leadership styles, 2) aggressive behavior is high under laissez-faire leadership styles, 3) aggressive behavior is intermediate under democratic leadership styles, and 4) productive group behavior is different in different leadership styles. Different leadership styles, therefore, were found to be a primary factor in the creation of different social
climates which affected group behavior. This early study resulted in a great deal of subsequent research on group climate.

**Murray's Need-Press Model**

Henry Murray (1938) formulated the Need-Press model from Lewin's field theory, creating a classification scheme in which individuals and the environment were represented in common terms and with comparable magnitude. Murray believed that environmental climate could be measured according to the perceptions of individuals within the environment, and that perceptions of environmental climate exert an influence on behavior. In the Need-Press model, environmental press and needs are interpreted. Although Lewin believed an individual's perception of the situation could consistently be inferred from behavior, Murray disagreed. Murray did not see an invariable correlation between a subject's perception and subsequent behavior. Additionally, Lewin neglected the role of an outside observer's view of an individual's behavior, while Murray saw the importance of considering both individual's perceptions and an observer's perceptions of behavior for research purposes.

Murray's (1938) Need-Press Model was a reaction to early personality theories that identified and measured personality traits that were presumed to be the primary influence on behavior in various situations. Murray acknowledged that human behavior is determined in part by personality traits and needs, but additionally emphasized that components of the environment that satisfy or frustrate these needs are influential in human functioning. His perspective emphasized the cross-situational
variables of an individual's behavior in that individuals affect and are affected by their environments.

In the Need-Press Model (Murray, 1938, p. 124), "need" is described as an internal force of an individual that organizes, directs, and coordinates actions of the individual in an attempt to modify and adjust to situations. Murray (1938, p.72) conceived of need as a "hypothetical force in the brain region which organizes perception, apperception, intellection, conation, and action in such a way as to transform in a certain direction an existing unsatisfactory situation". Murray felt that needs are functional in character and are revealed in subjective and objective modes of behavior employed by the individual. Murray noted two basic classification of needs: 1) primary/viscerogenic needs, and 2) secondary/psychogenic needs.

In the Need-Press Model (Murray, 1938, p. 118), "press" is described as aspects or features of the environment that are perceived by individuals within the environment. The concept of environmental press provides an external situational counterpart to the individual's internalized personality needs. Press is thought to be a significant factor in the determination of behavior, as press can either support or frustrate the expression of an individual's needs. Murray therefore conceived the environment in terms of the kinds of benefits and harms that it provides to the individual within the environment. In this way, the environmental press is appraised according to what it offers to the individual living within it. Murray hypothesized that persons respond differently to the environmental press according their needs.
Murray (1938, p. 122) further delineated the notion of press into two categories: "alpha press" and "beta press". Alpha press is seen as the objective, directly observable aspects of the environment which can be noted and assessed by an external detached observer. Beta press is seen as the subjective aspects of the environment which are perceived by individuals within the environment. Beta press is the subject's private view and own interpretation of the phenomena that he perceives in the environment. Murray viewed beta press as the critical determinant of individual behavior and as such, holding more significance than alpha press.

In a West German review of the Need Press Model, Dreesman (1982) noted that the model viewed climate exclusively from a personal perspective and neglected the social dynamics and social context within an environment. This author called for an integration of cognitive as well as social processes in environmental research. In the educational setting, for instance, Dreesman viewed classroom climate as an element of cognitive representation which is shared by other class members. In this way, students are viewed as active interpreters of the environment while being nested in the social context of the class.

**Stern's Refinement of the Need-Press Model**

The Need-Press Model was further refined by George Stern (1958). Stern delineated Murray's categorization of beta press into two categories: "private" beta press and "consensual" beta press. Stern noted that these types of press could differ from each other as well as differ from the alpha press noted by a nonparticipant observer of the environment. Stern additionally regarded the capacity of the
environmental stimulus to elicit a response or to affect the behavior of the individual
an important criterion of alpha press, regardless of the individual's subjective
awareness of its presence or effect. To Stern, although alpha press is determined by
the observer's interpretation of events, it is necessary to acknowledge that the
participants themselves may consider these events to have a different significance than
the observer and/or may fail to give the events recognition. Stern described private
beta press as an individual's phenomenological world containing his/her unique,
private view of the events in which he/she takes part (1962, p. 165). Consensual beta
press is described as the shared view of the environment held between members of a
group. Although Murray conceived of beta press as a unique and inevitably private
perception of individuals within the environment, Stern recognized a need to examine
the consolidation of individual private views with the views of others in the same
environment who may share a common interpretation of the events in which they
participate.

Stern (1964) also delineated the concept of press into two other distinct
categories: anabolic and catabolic press. Anabolic press consists of stimuli that are
potentially conducive to self-enhancing growth; catabolic press consists of stimuli that
are antithetical to personal development or are likely to produce countervailing
responses.

Stern noted that the interaction of needs and press are complementary but not
necessarily reciprocal. He believed that growth enhancement occurs in situations in
which there is congruence between needs and press in a situation. In one of the early
attempts to examine individual-environment interaction, Pace and Stern (1958) constructed several editions of a needs inventory called the Activities Index (AI) using Murray's classification of needs as a model. In this tool, the measurement of 30 needs were used to assess the predominant characteristics of students in different colleges and universities. Each need scale in the AI contains ten items, for a total 300 statements to which responses of "like-dislike" are given.

A corresponding test for describing the press of college environments, called the College Characteristics Index (CCI), was subsequently constructed. Stern maintained that the rules, rewards, regulations, restrictions, classroom climates, personal, and social activity patterns differentiated one college atmosphere from another (Stern, 1970, p. 4). Pace and Stern noted that information regarding these global characteristics within a given school is not commonly available, and that these components of the college environment can have significant impact on students. The CCI consists of 300 statements regarding the social environment of a college or university to which responses of "true-false" are given. The statements are organized into 30 ten-item scales, with a press scale for each need scale that was included in the Activities Index.

Using the AI and the CCI, Pace and Stern were able to demonstrate differences among the presses of various American colleges as well as differences in needs among students attending those colleges. In particular, these researchers wanted to take into account the congruence between student needs and environmental press in the designing of maximally effective learning environments.
Several other instruments that target the environment of entire schools have developed from subsequent modification of the CCI, resulting in a variety of research applications (Astin & Holland, 1961). One of these, the College Characteristics Analysis, delineates three sources of college press: the administration, the academic staff, and the characteristics of students. This instrument illustrates the tendency for early research on school environment to regard schools as formal organizations, and as such place greater emphasis on organizational climate variables than psychosocial climate variables.

Although the construction of school and classroom level environment instruments occurred concurrently, many authors have discussed the independence in these research approaches and the important distinction between the two (Anderson, 1982). Despite logical linkages, these instruments have different theoretical and conceptual foundations as well as distinct research applications. However, recent research (Fraser, Docker, & Fisher, 1988) provides evidence of the utility of simultaneously employing these two related research traditions in the assessment and improvement of the related environments of both the individual classroom and entire school level environments.

It is interesting to note that assessment studies of both individual classrooms and entire schools often overlook the impact of the psychosocial environment. In the higher education setting, Stern (1970) noted the following learner objectives: the acquisition of knowledge, the development of intellectual skills, and growth in supracognitive areas. It was Stern's conviction that objective educational outcome
measures, such as student grades and performance on standardized tests, conceals the complex relationship and impact between the person and the environment. Walberg (1982, p. 301) reviewed investigations employing learning environment instruments in which learning gains were predicted more accurately by classroom environment measures than objective variables such as student social class, teacher behaviors, school and class size, and educational expenditures. Walberg recommended that climate measure be included along with other standard objective assessment measures in school accountability, evaluation, and research.

Moos' Classification Scheme of Environmental Dimensions

Rudolph Moos (1974a) utilized Lewin's Field Theory and the Need-Press Model as well as Stern's revisions to further develop the concept of the classroom learning environment. Moos conducted a research program at Stanford University that involved the formation of perceptual instruments for a variety of human environments, including psychiatric hospitals, community-based psychiatric treatment programs, prisons, military training units, university residences, family, work, and school milieus. Moos chose to consider consensual beta press in his research, and restricted the design of his instruments to an analysis of perceptual scores obtained from group means within the targeted environment. In his work with school milieus, Moos conceptualized classroom environments as dynamic, complex, multidimensional, and interactional social systems (Trickett & Moos, 1973, p. 94). It was his opinion (Moos, 1980) that individual classrooms have distinct environments that mediate
personal and academic growth that may have more influence on learning than the overall school environment.

Moos envisioned classrooms as inclusive of the following five domains: 1) physical features, 2) organizational policies, 3) teacher characteristics, 4) student characteristics, and 5) psychosocial climate. In developing his classroom learning environment instrument, Moos (1979, p. 136) noted that for the most part, educators acknowledge the distinct atmosphere of the classroom setting as a locus for student personal and academic growth. He traced the historic use of outside observers’ employment of detailed coding categories for teacher verbalizations as well as classroom activities as indicators of the learning environment. In sharp contrast to these methods of observation, Moos insisted on defining the classroom environment in terms of the shared perceptions of the people in that environment. Moos (1979, p. 138) saw two advantages of consensual beta press observation: 1) the class is characterized through the eyes of the actual participants, and 2) information could be sought regarding long-standing attributes of the classroom. Moos conceptualized the classroom environment as inclusive of teacher behaviors, teacher-student interactions, and student-student interactions.

Independently, Moos (1976, p. 331) developed a classification scheme in which three broad dimensions were postulated to represent the components within a wide variety of human environments. He and his colleagues examined theoretical and empirical inquiry of educational and organizational psychology, and called on the social system perspective to delineate the three general dimensions. The initial work
of Moos and his associates, as well as that of subsequent investigators, indicates that the three domains can characterize the psychosocial environments of varied settings. Moos has found that all three dimensions must be evaluated in order to obtain a reasonably complete picture of the psychosocial environment. This scheme has provided a foundation for extensive research regarding classroom learning environments. Empirical study has found the dimensions to provide a reliable structure for characterizing classroom learning environments. Walberg (1976) is a proponent of Moos' three factor model, encouraging its use as an underpinning for perceptual research regarding the psychosocial learning environment.

The three dimensions outlined by Moos (1976, p.331) include: 1) the relationship dimension, 2) the goal orientation dimension, and 3) the system maintenance and change dimension. The relationship dimension appraises the nature and intensity of personal relationships within the environment. In classroom environment research, this dimension includes affective aspects of student-student and student-teacher interactions. The relationship dimension assesses the extent to which people are involved in the environment, the extent to which people support and help one another, and the extent that there is spontaneity and free and open expression among the group members. The goal orientation dimension involves variables relating to the specific functions of the environment under study. This dimension appraises the underlying goals toward which a setting is oriented. The exact nature of the goal orientation dimension varies somewhat among different environments, depending on the underlying purposes and goals involved in the setting. In the study
of classroom environments, this dimension assesses specific functions of the classroom and the academic style of the class. The system maintenance and change dimension appraises the degree of structure, the clarity of expectations, and the openness to change that characterize a setting. In classroom environment research, this dimension involves structural aspects of the classroom including innovative approaches to teaching and learning.

Perceptual Measures in Classroom Environment Research

Moos constructed his model of environmental dimensions with the assumption that members of a given environment create reality and that this reality can only be understood and validly measured through their own perceptions. Perceptions are subjective interpretations on which individuals act. In the assessment of psychosocial environments, perceptual instruments are constructed to measure consensual beta press, utilizing the collective perspectives of selected psychosocial characteristics of the environment.

Perceptual instruments are classified as "high inference measures" in that they require the respondent to make a judgement about the meaning of events in the learning environment. "Low inference measures", in contrast, tap specific explicit phenomena in the environment using recordings of classroom behaviors by observers. Chavez (1984) traced the history of environmental research in the classroom beginning with these low inference, direct observational methods. Walberg (1976, p. 159) also noted that early studies of classroom environment held simplistic views of behavioral causation, regarding the teacher as the first or only source impacting
student behaviors in the classroom. For example, in 1949 Withall (p. 538) defined the social emotional climate as "the general emotional factor which appears to be present in the interactions occurring between individuals in face to face groups". He postulated that climate could be measured in terms of teacher behavior alone, by examining the pattern of the teacher’s verbal communication patterns. This was a typical approach of investigators in the 1950’s who were interested primarily in student-teacher interactions. In the late 1950’s and early 1960’s, studies were conducted of both nonverbal behavior and the classroom social structure, reflecting the current trend of behaviorism. During that time, Pace and Stern’s construction of the Activities Index established the utility of high inference measures in the study of the learning environment. This approach has been prevalent for more nearly three decades of classroom environment research.

Walberg (1982, p. 291) noted that research employing student perceptions of the classroom learning environment was first attempted in high schools in the United States. Subsequent study utilizing perceptual measures has involved diverse classroom subjects, grade levels, and countries. Student perceptions have been found to be reliable and valid measures of classroom climate. Additionally, perceptual measures have served as indexes of the amount of cognitive, affective and behavioral gains that are possible during the school year or during shorter periods of time. In accordance with this viewpoint, Walberg (1982, p. 292) defined classroom climate as "the student perception of the social-psychological aspects of the classroom group that influence learning". Although Walberg maintained that perceptions may mediate the
main effects and interaction effects of learning, he cautioned that it cannot be assumed that learning will be affected simply by modifying perceptions of the learner.

Fraser (1981b) reviewed three defined methodologies for assessing and studying the classroom psychosocial environment. One approach previously discussed entails observation and systematic classification of classroom interaction. A second approach includes assorted qualitative research techniques including naturalistic inquiry, ethnography, or case study. The third approach focuses on measurement of student and teacher perceptions of the classroom. Walberg & Haertel (1980) reviewed the following beneficial aspects of perceptual measures over direct observational techniques: 1) perceptual measures are more economical than trained observers needed for direct observation, 2) perceptual measures are based on the respondents’ experience over many contacts with the environment, 3) consensual perceptual measures involve the pooled judgements of all students within the environment, and 4) perceptual measures have been found to account for more variance in learning outcomes. Empirical study has demonstrated the ability of members of learning environments to perceive and weigh classroom stimuli and render valid judgements about psychosocial characteristics of their classrooms.

Perceptual measures of environmental assessment employ group consensus to provide a formal measure of the psychosocial properties of an environment. However, Waxman (1991) recently called for a key change in the instruments to focus on personalized forms of the instruments. In that way, individual student responses can be elicited regarding his/her own view of the environment, rather than an
individual's impression of the class as a whole. This viewpoint reflects the delineation of private and consensual beta press as delineated by Stern.

In the present study, perceptual measures were employed to assess the consensual beta press as perceived by undergraduate nursing students and faculty in clinical post-conferences. These measures were derived from the solid theoretical underpinning provided by Lewin, Murray, Stern, and Moos as described in this chapter. The review of the literature that follows examines the existing learning environment instruments that influenced the development of the "Clinical Post-Conference Learning Environment Survey" constructed for this investigation.
CHAPTE'lt II

REVIEW OF THE LITERATURE

Review of Related Literature: The Learning Environment

Overview of Learning Environment Instruments

In attempting to assess the learning environment for its own inherent value, as well as relate it in empirical study to process and outcome variables, a number of classroom learning environment instruments have been developed. Each of these instruments can be conceptualized according to Moos' classification scheme as previously described. These perceptual instruments have been tested extensively and their psychometric properties document their ability to provide valid and reliable mechanisms for the measurement of learning environment characteristics. The instruments vary in a number of ways, including the intended age of the respondent, the format, and the subscales chosen for measurement. Additionally, shortened forms of the instruments are also available and have been tested psychometrically (Fraser, 1987). These forms can be used when there is a need for reduced testing and/or scoring time.

Measurement issues related to learning environment instruments.

Much discussion exists in the literature regarding the approaches to measurement in empirical study of the learning environment. Ellett (1986) discriminated between the "unit of observation" which is the level at which the data is
surveyed, and the "unit of analysis" which is the level at which the data is processed and interpretations are based. In order to guide the collection and analysis of data, Fraser (1991, p. 5) advised investigators to predetermine if they intend to base their analyses on the perception scores from individual students or from the average of the environment scores of all students within the same class.

Trickett and Wilkinson (1979) asserted that environmental assessment is not intended to discriminate individual differences in perception, as consensual beta press defines the environment according to the pooled perceptions of members of the setting. However, these authors have studied the effect of using both group mean scores and raw data from each individual for data analysis, and have noted that although there is a conceptual difference in the structuring of data for analysis, there are only limited practical implications as both methods of analysis yielded similar findings. Learning environment investigators note that the use of the group mean negates the ability to investigate individual differences and individual reactions to the learning environment. One solution to this dilemma is suggested by Walberg, Sorenson, and Fischbach (1972) who recommend the calculation of separate means for different subgroups within the classroom based upon individuals' attributes, with subsequent measurement of the impact of the environmental variables on the subgroup means. Dreesman (1982) also suggested that since classroom climate is conceived as the shared perception of the members within a group, the standard deviation must be examined as well as the class means of the subscale scores.
Development of the instruments.

For the most part, comparable procedures were used in the development of the most widely used classroom environment instruments. Initially, salient dimensions of the learning environment for the intended population were identified. Dimensions selected for inclusion in the instrument were those previously identified as predictors of learning, those considered relevant to social psychological theory and research, those found useful in theory or research in education, and those intuitively judged to be relevant to the social psychology of the classroom. Test items reflecting the chosen constructs of the instrument were written, having been derived by observation, interviews with teachers and students, review of related literature, and findings from prior empirical study. Content validity was solicited from both students and faculty content experts. The instrument was then field tested. Scale statistics were obtained, with item analyses identifying items whose removal would enhance the instrument. Revisions of the instrument were then completed based on these statistics.

Instrument forms: actual and ideal.

Most classroom environment instruments are able to be administered in two separate forms: the actual and ideal (Fraser 1991, p. 10). The actual form measures what respondents perceive as existing in the current environment, while the ideal form measures respondents' perceptions of an ideally liked or preferred environment. The wording of the items in these two forms is identical, but instructions for responding to the items are different. It is interesting to note, however, that the notion of an "ideal" environment is without a clearly defined theoretical base, and without
designated criteria that can meet each individual's requirement for ideal conditions (Moos 1976, p.4). One characterization of an ideal environment is described by Mumford (1968) as "seeking continuity, variety, orderly and purposeful growth" as opposed to an environment that "magnifies authoritarian power and minimizes human initiative, self-direction, and self-government". In this light, it is postulated that an ideal environment is most likely to be achieved when critical decisions about constructing and changing the environment are in the hands of the people who live and function in it (Moos, 1976, p.4). Particular to classroom environments, Moos (1979, p. 235) notes that teachers, principals, parents, and school board administrators may disagree on the ideal emphasis of certain classroom characteristics such as competition, but they typically agree that student involvement, class cohesion, teacher support, and clarity of rules are critical components of ideal classroom environments.

Research applications.

Despite debate regarding ideal characteristics in the classroom environment, the actual and ideal forms of learning environment instruments have been used concurrently in a variety of research applications. There have been examinations of the congruence between the perceptions of the actual environment, which is indicative of the press of the environment; and perceptions of the preferred environment, which is indicative of the respondent's needs. Other studies investigate differences between student and teacher perceptions of both the actual and the ideal learning environment.
Fraser (1980) reviewed the investigations of classroom learning environments since the 1970's that followed the extensive foundation laid by the work of Walberg and Moos in the construction of each of their instruments. There have been numerous investigations involving different subject characteristics and subject grade levels, as well as cross-cultural studies using different instruments, sample sizes, and data analytic techniques. A considerable amount of empirical work has involved the exploration of cognitive, affective, and behavioral outcomes related to student perception of classroom environment (Walberg, 1982, p. 300). Ellett (1986) has more currently called for outcome studies which identify critical attributes of learning environments that promote these academic gains.

When measuring the learning environment as a dependent variable, classroom environment dimensions can provide information regarding the effectiveness of alternative and innovative curricula that use nontraditional educational techniques (Fraser, 1989). Although the number of studies using classroom environment variables as a criteria of curricular effectiveness is small, the evidence gathered from these studies warrants the use of classroom environment instruments as measures in curriculum evaluation.

The most notable classroom environment instruments will be briefly presented, including subscale definitions and pertinent research findings utilizing the instrument. Following discussion of the instruments, the person-environment fit paradigm will be explored as one basis for the employment of these tools in educational settings. Finally, there will be an examination of the usefulness of these instruments in
facilitating change and improving conditions within the learning environment of educational settings.

The Classroom Environment Scale (CES)

Introduction to the instrument.

The Classroom Environment Scale (CES) was developed by Rudolf Moos of Stanford University in conjunction with a research program involving the development of perceptual measures for a variety of human environments. The CES is intended for the junior high and high school student populations, and has been widely utilized in this as well as other age populations. In its final version, there are nine subscales containing ten items each for an instrument total of 90 items; a true-false response format is employed.

According to the three dimensions outlined by Moos for conceptualizing human environments, the subscales for the CES are subsumed as follows: within the relationship dimension, subscales include involvement, affiliation, and teacher support; within the goal orientation dimension, subscales include task orientation and competition; within the system maintenance and change dimension, subscales include order and organization, rule clarity, teacher control, and innovation. Moos and Trickett (1974) present the following subscale definitions for the CES: 1) Involvement measures the extent to which students are attentive and interested in class activities and participate in discussion, 2) Affiliation measures student friendship and the extent to which students help each other and enjoy working together, 3) Teacher Support measures the help, interest, trust, and friendship that the teacher shows toward
students, 4) Task orientation measures the completion of planned activities and adherence to the subject matter, 5) Competition measures the students' competition with each other for grades and recognition, and the difficulty of achieving good grades, 6) Order and Organization measures orderly student behavior and the organization of assignments and class activities, 7) Rule Clarity measures the establishment and adherence to a clear set of rules, and students awareness of the consequences if they do not follow them, 8) Teacher Control measures the strictness of the teacher regarding rule enforcement and the severity of punishment for rule infractions, and 9) Innovation measures student contribution to the planning of class activities, and the number of unusual and varying activities devised by the teacher.

Statistical analysis using the actual form of the CES with 1083 students demonstrates alpha coefficients for the subscales ranging from .67 to .86 (Moos & Trickett, 1987). The average item to subscale correlation range is .51. The average intercorrelation of each subscale with the other subscales ranges from .1 to .31, and average intercorrelation among all nine subscales is .26. These statistics indicate that distinct, though moderately correlated aspects of the environment are measured in the CES, following the conceptual underpinnings of the instrument. Temporal stability of the CES has been documented (Moos & Trickett, 1987). The actual form of the instrument was administered to 52 students in four classrooms and retested six weeks later with subscale correlations ranging from .72 to .90, with a mean of .82. In a two-week test-retest administration, the profile average correlations were .94, indicating temporal stability with a capability to reflect changes occurring over time.
**Factor analysis studies.**

Moos & Trickett (1987) noted that factor analysis of the CES highlights the value of employing a standard set of conceptually related dimensions to describe a classroom setting; factor analysis studies have found the CES items to cluster on three to six factors. De Ketele (1985) reviewed four investigations using the CES, and established that classroom environments are multidimensional, with a general factor unable to be discriminated. Additionally, De Ketele noted that in cross-cultural research, Moos’ three dimensions are present but supported in different ways.

In an early factor analytic study of the CES, Trickett and Quinlan (1979) employed a large sample consisting of 3,480 students in 229 classes in 25 high schools in the United States. A principal component analysis with varimax rotation revealed that 51% of the variance could be accounted for by the following six factors: rule emphasis, order and organization, friendly teacher, innovative student-oriented teaching approach, student competition, and student affiliation. This factor solution was interpreted to be consistent with the multidimensional nature of Moos’ three conceptual domains and subscales.

In another study employing the factor analytic technique, Wright and Cohen (1982) obtained four factors of the CES: affiliation, organization, teacher control, and innovation. Additionally in this study, 511 fifth and sixth graders completed the CES as an independent variable. Dependent measures included a mood adjective checklist, a peer sociometric rating, reading and math report card grades, Stanford achievement tests scores, and teacher’s ratings of adjustment. Results indicated that classrooms
perceived as having a greater degree of order and organization and affiliation correlated with increased peer sociometric ratings and teacher adjustment ratings. In classrooms with a greater degree of order and organization, affiliation, and innovation, enhanced student mood and adjustment were found.

Schultz (1979) was interested in the perceived applicability of the CES as rated by students. Using 185 students in eleventh and twelfth grades, respondents were asked to rate, on a scale of one to four, the relevancy of each item on the CES for describing the classroom environment. Student relevancy ratings in this study did support the CES as a valid measure of the classroom environment. Additionally, respondents completed the actual and the ideal forms of the instrument. The product of the subscale means for each of the three data sets (actual, ideal, and reported relevancy) was subjected to principal component analyses. Three roots resulted which corresponded to Moos' scheme. The relationship dimension subscales of involvement, affiliation, and teacher support were most critical in describing both the real and the ideal learning environment. An orderliness or achievement factor was found to be composed of task orientation and order and organization; a third control factor included competition, rule clarity, and teacher control.

Research applications.

Hearn and Moos (1978) were interested in the relationship between school subject matter and student learning environments perceptions. These investigators distributed the CES to a sample of 207 junior and senior high school classrooms. Additionally, they employed Holland's classification scheme to categorize classes of
particular subjects to one of six occupational types (realistic, investigative, social, conventional, enterprising, and artistic). The underlying premise was that student vocational choices are an expression of certain personality types; with different disciplines promoting specific types of environments. A one-way analyses of variance was conducted for each of the CES subscales, and significant differences were noted for eight of the nine CES scales. The specific differences found generally supported the researchers' expectations. For example, students perceived artistic type classes to emphasize innovation and to de-emphasize competition, rule clarity, and teacher control. Investigative classes stressed task orientation and teacher control but downplayed involvement, affiliation, and innovation.

The CES was used to examine differences between private and public boarding schools in the United States, separating out, as well, single-sex and co-educational differences of those environments (Trickett, Castro, Trickett, & Schaffner, 1982). A sample of 456 students in 78 classes in 15 high schools completed the instrument, with results indicating differences between private and public boarding school classes on seven of the nine subscales exclusive of competition and innovation. Private schools were noted to have greater involvement and cohesion but less rule orientation than public schools. Differences between single-sex and coeducational schools existed on six of the nine subscales, with similar amounts of teacher support, rule clarity, and innovation.

The effect of the perceived learning environment on student grades and absences was investigated by Moos & Moos (1978), using a sample of 19 high school
classes in one school. These researchers hypothesized that involvement, affiliation, and teacher support would be positively related to improved grades and fewer absences, with competition and teacher control contributing to lower class grades and increased school absence. Simple correlational analysis revealed that the number of significant relationships between the outcomes and environmental perceptions on a CES scale was about six times that expected by chance. An increase in mean grades was significantly correlated with student perceptions of greater amounts of involvement, affiliation, and teacher support. Additionally, lower student perceptions of teacher support was found to be inversely correlated with the number of student absences.

Fraser and Fisher (1982) employed a sample of 116 eighth and ninth grade students, each having a different teacher, in 33 different schools. Three cognitive and six affective measures were administered both at the beginning and end of the same school year, while classroom environment was assessed by administering the CES at mid-year. In addition, information was gathered about student general ability. Data analysis was performed in six different ways: simple, multiple, canonical correlation analyses were performed separately for raw post-test scores and residual post-test scores were adjusted for corresponding pretest and general ability. Results of the study indicated that the nature of the classroom environment contributed substantially to predicting course achievement. Students in classrooms with greater perceived emphasis on involvement, innovation, and order and organization had more interest in
and attitude toward science. These students also had increased understanding of science and were better able to formulate scientific conclusions.

To demonstrate the relationship between student levels of cognitive development and perceptions of the learning environment, Hadley and Graham (1987) utilized a sample of 156 college students in 10 classes. With the CES as an independent measure, the respondent’s cognitive development was assessed. Pairs of trained judges evaluated student responses with a documented interrater agreement of 77%. Of the responses to the nine CES subscales, five were perceived in accordance with students’ developmental level ratings; for instance, students rated at the lowest level of cognitive development perceived the environmental press differently than students rated at the highest level. It appeared that differences in student cognitive development was correlated with differences in perception of environmental press.

The relationship between teaching styles and teacher perceptions of the learning environment was investigated by Schultz (1982). Using 64 teachers and 48 student teachers in United States high schools, it was hypothesized that different teaching styles create different learning environments. Teachers responses to the Minnesota Teacher Attitude Inventory (MTAI) were correlated with their responses to the ideal form of the CES. Results indicated a correlation between a teacher’s style and the learning environment that he/she would ideally envision. For example, teachers who rated themselves as directive preferred increased amounts of teacher control, competition, and task orientation in the classroom. Teachers who rated themselves as more flexible preferred more open learning environments.
In order to measure the effect of learning environment perceptions on motivation to learn social studies, Knight and Waxman (1990) surveyed a population of 157 sixth graders. Three instruments were used: 1) the CES; 2) a multidimensional motivational instrument that measures achievement motivation, academic self-concept, and social self-concept; and 3) an instructional learning environment questionnaire in which selected aspects of instruction are measured. Three findings emerged from this study. First, the notion of multiple dimensions of motivation was supported. Second, instructional learning environments were characterized by an emphasis on academic activities and content. Third, student satisfaction of the learning environment was positively correlated with student motivation to learn.

Knight (1991) duplicated aspects of this study with sixth and eighth graders in language arts classes. Again, certain categories of the learning environment were noted to be associated with different aspects of motivation. Greater amounts of student involvement, affiliation with classmates, and general satisfaction with the environment contributed to increases in the measurement of motivation. Additionally, certain aspects of the instructional learning environment were found to affect social self-concept more than achievement motivation or academic self-concept.

The Learning Environment Instrument (LEI)

Introduction to the instrument.

The Learning Environment Instrument (LEI) was developed by Herbert Walberg in conjunction with additional empirical study of the Harvard Project.
Physics. The Harvard Project Physics was an experimental high school physics
course emphasizing the philosophical, historical, and humanistic dimensions in the
study of physics with the use of a variety of innovative instructional media. Walberg
constructed the Classroom Climate Questionnaire (CCQ) to assess student perceptions
of the learning environment in this experimental course. The construction of the
CCQ was based upon the previously developed Group Dimension Description
Questionnaire (Kuert, 1979, p. 185). This questionnaire was designed to measure
general characteristics of adult groups. Walberg noted that although a number of the
items were not applicable for the classroom setting, several of the dimensions
appeared to be related to learning. The CCQ was developed, but subsequent
psychometric analysis found its items to be unreliable and excessively redundant
(Walberg & Anderson, 1968). Walberg then created a new instrument, the Learning
Environment Inventory (LEI). The LEI consists of 15 subscales each containing
seven items for a total of 105 instrument items. The subscales include: cohesion,
diversity, formality, speed, material environment, friction, goal direction, favoritism,
difficulty, apathy, democracy, cliqueness, satisfaction, disorganization, and
competition. This tool employs a four-point scale in which the respondent rates
his/her disagreement or agreement of how well the item describes the classroom. The
concepts measured within the LEI are similar to other learning environment
instruments, although the subscale labels are different.
Research applications.

In an impressive statistical endeavor, Haertel, Walberg, and Haertel (1981) correlated student perceptions of their classroom learning environments as rated by the LEI with learning outcomes. This cross national meta-analysis involved 734 correlations from a collection of 12 studies using 823 classrooms containing 17,805 students. Learning outcomes including student achievement, performance, and self-concept were positively associated with perceived actual subscales of cohesiveness, satisfaction, task difficulty, formality, goal direction, democracy, and the material environment beyond that attributed to ability and pretest measures. Negative associations with outcome measures were found with the subscales of friction, cliques, apathy, and disorganization. The size of these correlations were significantly associated with the dimension of classroom environment considered, the unit of statistical analysis, and the nation in which the study was conducted. Correlation size, however, did not depend upon the number of students tested, the subject matter taught, nor the type of learning outcome examined. Importantly, these authors concluded that this analysis "provides consistent and strong support for the incremental predictive validity of student classroom perceptions in accounting for appreciable amounts of learning variance beyond that attributed to student entry characteristics such as pretest and general ability".

The factor structure of the LEI was uncovered by Randhawa (1990) who also noted the congruence between the learning environment factors and cognitive variables for tenth grade math and English courses. Three common factors were
found within each course. Randhawa noted that the structural properties of the factors were unaffected by cognitive variables but sensitive to instructional contexts of the environment. In another investigation with a large number of this age population and these school subjects, Walberg, Sorenson, and Fischbach (1972) examined the variables of school size, ratio of male to female students, and parents' socioeconomic status on four LEI scales. In this investigation, means for the subscales were calculated separately for subgroups in an attempt to explore the effects of subgroup characteristics with environmental perceptions. Males in lower socioeconomic groups were found to be more satisfied with the learning environment than low socioeconomic group females. In classes with greater numbers of individuals of high socioeconomic status, males and females viewed the environment as being less difficult and having less competition. Conversely, in those same classroom, students of low socioeconomic status viewed the environment as more competitive and difficult.

Walberg (1969) conducted a series of outcome prediction studies using the LEI with 2,200 students in 144 classrooms, comparing cognitive and noncognitive measures at the end of the school year with statistical control for performance on corresponding measures at the beginning of the year. The dependent measures included: 1) a test for understanding of science, 2) a science process inventory, 3) a physics achievement test, 4) a measure of science interest, and 5) a recording of the amount of voluntary participation in physics activities. He attempted to determine if aside from the course effect, the learning environment influenced classroom learning.
Simple, multiple, and canonical correlations between class mean LEI scores and class
means of raw scores obtained on the learning outcome post-test measures were
calculated. Walberg noted that environmental variables were able to predict learning
outcome measures in the following ways. Difficulty was found to be the best
predictor of cognitive post-tests; the more difficult the learning environment, the more
gain on physics achievement and science understanding. Classes perceived by
students as lacking friction, apathy, and cliques were found by students to be more
satisfying and students displayed a greater interest in science, participated in greater
amounts of science activities, and devoted more time to outside study of science.
Walberg concluded that measures of perceived classroom environment can predict
learning criteria before and after relevant control variables are statistically removed
from the criteria. Additionally, although prior research suggested that affective and
cognitive perceptions of the classroom environment are fused, this study indicated that
cognitive and noncognitive measures may reflect separate dimensions of learning.
Walberg and Ahlgren (1970) later suggested that cognitive and noncognitive learning
might be affected by intentional manipulation of variables that affect classroom
climate.

Walberg (1982, p. 295) also conducted analyses of the learning environment
using the LEI in which subscale regression equations were utilized, and ability and/or
pretest measures were employed as controls. He detected the following: "the
average incremental variance accounted for in learning outcomes is 20%, with a range
from 1 percent to 54 percent. Thus, regressions containing control and perceptual
variables account for large amounts and, in some cases, nearly all of the total variance in learning outcomes. These analyses indicate that environmental scale measures taken during the course of learning can afford an accurate prediction of how much will be learned during the school year and can serve as a useful index of the amount that the class is learning at any given time."

An investigation of student perceptions of classroom environment as process criteria in the evaluation of materials developed by the Australian Science Education Project (ASEP) was conducted by Fraser (1981a). A nine-scale version of the LEI used utilized with a sample of 541 seventh grade students in order to compare the perceived environment in ASEP classes versus the environment perceive in conventional classrooms six months after the beginning of the school year. When student socioeconomic status, general ability, and sex were controlled, multiple regression analyses revealed that ASEP students perceived their classrooms as more satisfying, more individualized, and having a better material environment. Classroom environmental variables were able to distinguish the two curricula even when achievement outcome measures did not show differences between the classrooms.

My Class Inventory (MCI).

In 1973, Anderson modified the LEI to construct an instrument called My Class Inventory (MCI) for elementary school research with children aged eight to twelve. This instrument is comprised of 45 items, with 9 items contained in 5 scales. The MCI differs from the LEI in four ways: 1) the MCI contains only 5 of the LEI's original 15 scales to avoid fatigue, 2) the item wording has been simplified to enhance
readability, 3) the four-point response format of the LEI has been decreased to a two-point yes-no format, and 4) the students answer on the questionnaire itself instead of on a separate response sheet.

Fisher & Fraser (1981) explored the predictive validity of the MCI among a sample of 2305 twelve year old students in 100 science classes in Australia. The two dependent variables were understanding of science and interest in science. Multiple regression analyses were used to estimate the amount of variance accounted for by the MCI environmental dimensions. Results indicated that without control for pretest and general ability, the set of MCI scales accounted for 16% of the learning outcome variance of the understanding measure and 12% of the interest measure. When pretest and general ability were controlled, the set of MCI scales accounted for 7% of the variance in post-test understanding scores and 5% of the variance in post-test interest scores.

**Individualized Classroom Environment Questionnaire (ICEQ)**

**Introduction to the instrument.**

In order to explore the effects of Australian schools that had developed programs using individualized instructional strategies in the classroom, Fraser (1989) developed the Individualized Classroom Environment Questionnaire. Although the CES and LEI had previously been widely utilized in the study of conventional classrooms, Fraser did not find these instruments germane to inquiry-based educational programs. The particular dimensions chosen for inclusion by Fraser were derived from the literature regarding individualized or open education. This
instrument contains 5 scales, each measured by ten items, for a total of 50 items. The five scales (personalization, participation, independence, investigation, and differentiation) are structured according to the three dimensions outlined by Moos. Respondents rate the frequency of the item occurrence (never-always) within the classroom according to a five-point scale.

**Research applications.**

A recent investigation of the learning environment employed both quantitative and qualitative research techniques (Fraser, Rennie, & Tobin, 1990). In a innovative Australian high school, qualitative observations of two science teachers as well as ICEQ and CES scores of their classes were the focus of study. A research team used the ethnographic techniques of direct observation and interview with interpretative research methods for qualitative descriptive data. The underlying tenet of the study, based on prior research, was that exemplary teachers create more favorable learning environment, as noted by students, than non-exemplary teachers. The following findings emerged from this investigation: 1) teachers used metaphors to describe their teaching role in the classroom, and those metaphors were observed in their teaching behaviors, 2) teachers beliefs about teaching and learning had major impact on the implementation of the curriculum, 3) there was an emphasis on facts and workbooks rather than on understanding in situations of limitations in teachers' knowledge bases, 4) student perceptions of the classroom learning environment were related to teachers knowledge and beliefs, 5) student perceptions as rated by ICEQ and CES scores were consistent with the field observers record regarding the learning environment, and
6) teachers' expectations of individual students were reflected in those individuals' perceptions of the environment; different students perceived the environment differently because within the same classroom a difference did exist.

Additional Learning Environment Instruments

With the success of ICEQ in differentiating conventional and individualized classrooms, Fraser created another tool, the Science Learning Environment Instrument (SLEI) to measure the environment of high school science classrooms (McRobbie & Fraser, 1993). This instrument has been used in cross-national research, with results demonstrating variances in student cognitive and affective outcomes depending on the science learning environment, even after control was established for student background characteristics.

Additionally, Fraser, Treagust, Williamson, and Tobin (1987) have constructed an instrument designed to measure the environment of college classrooms, called the College and University Classroom Environment Inventory (CUCEI). These researchers acknowledged empirical analysis of entire college environments following initial work by Pace and Stern (1958), but noted the lack of study regarding actual classrooms in higher education. They were particularly interested in measuring the learning environment of small seminar classes in this setting. In the development of this tool, other secondary school instruments were examined, and the three dimensions as outlined by Moos served as the theoretical foundation. The tool contains 49 items, with seven items placed within each of seven scales. Respondents rate each item on a four-point scale of agreement or disagreement. Fraser, Treagust,
and Dennis (1986) report the cross cultural validity of the instrument in both the
United States and Australia as well as acceptable internal consistency, reliability, and
discriminant validity. The studies using the CUCEI have shown, as have
investigations at the primary and secondary school level, that there is an association
between student outcome measures and the nature of the classroom environment.

Fraser, Williamson, and Tobin (1987) used the CUCEI in an alternative high
school in Australia sampling 536 students in 45 classes. The alternative classrooms
were noted to have greater emphasis than corresponding traditional classrooms in the
following areas: involvement, satisfaction, innovation, individualization, teacher
interest, and achievement orientation. Additionally in this study, 104 teachers
completed the School Level Environment Questionnaire (SLEQ) and were found to
have greater amounts of professional interest and innovative teaching approaches than
those teaching in traditional schools.

**Person-Environment Fit Paradigm**

Lewin's theoretical framework, \( B=f(P,E) \), provides the basis for a paradigm
that explores the congruence of the person and the environment, as well as the impact
of this congruence, on behavior. In educational settings, this paradigm is called the
Person-Environment Fit model, and it seeks to demonstrate the interaction between
different kinds of students and different educational environments on learning
behaviors.

Hunt (1975) outlined critical characteristics of this paradigm. He believed
that the interactions between persons and environments must be considered in.
reciprocal terms. He also maintained that human developmental issues must be considered when exploring person-environment congruence. Additionally, Hunt asserted that a major contribution of the person-environment fit model is the sensitization of educators to student needs, and he urged educators to consider the practical implications of this paradigm in the educational setting. Mitchell (1969) as well noted that an understanding of the mutual interaction of the environment with an individual's needs and characteristics is critical for understanding and predicting individual behavior. He emphasized the importance of examining those environmental conditions that facilitate or impede an associated need of an individual. The use of perceptual measures regarding classroom learning environments can provide a mechanism for exploring the Person-Environment Fit model. However, it is important to recognize that it is the class as a whole whose perception is being examined by these tools, and that particular individual congruence is not the focus of instrumentation to date.

A review of the literature indicates resistance to the person-environment interaction paradigm. Empirical study involving this model has been restricted by the researcher's choices of variables under investigation, the nature and hypotheses of the study, the organization of the study, and the research techniques employed for data analysis (Mitchell, 1969). The task of discriminating complex patterns of interactions between the multitraits of each individual within a multitrait environment presents a tremendous challenge to educational researchers.
Aptitude Treatment Interaction (ATI) Paradigm

The Aptitude-Treatment Interaction (ATI) model further delineates the person-environment fit paradigm. Investigations using the ATI model explore the main and interaction effects between specific student aptitudinal variables and different educational treatments on learning. ATI is seen as a more restricted approach to the study of individual differences and the environment than the person-environment fit model. Key objectives of ATI studies have been to investigate the differential effectiveness of alternative educational treatments for students differing on various aptitudinal measures. The interaction between these is thought to be critical to understanding and predicting variation in learning patterns among students.

Nearly four decades ago, Cronbach (1957) noted the disparity in the discipline of psychology between those individuals performing purely experimental designs versus those working on correlation studies. An experimental design approach typically is initiated in order to determine the best treatment approach(s) for the problem under study; correlational designs are employed when attention is paid to characteristics or aptitudes of the individuals involved in the study. Cronbach emphasized the need to match these research designs, asserting that in order to analyze and understand behavior, both aptitudes and treatments needed to be considered together. On this note, Cronbach and Webb (1975) maintained that in educational research, class membership must be taken into account when data is examined, and they insisted that there be examination of both the main effects of aptitudes and treatments as well as the interaction effects of different treatments on
students with different levels of aptitudes. It is without question that different students learn better by different teaching methods, and therefore no single educational treatment will be most effective with all students.

On examination of the investigations employing the ATI paradigm, Walberg (1976, p. 155) cautioned that significant difficulties have been encountered by researchers. He noted that ATI studies are difficult to replicate and that only small and inconsistent effects have as yet been realized using this paradigm. The designs of the studies involve numerous combinations of complex interaction effects that must be carefully unscrambled. The use of multivariate statistical techniques and other approaches to data analysis have not been sufficient in resolving this problem. Alternatively, Walberg (1976, p. 156) refers to the large, consistent effects that have been found regarding student perception of the classroom environment on learning. Consistent in theory with the person-environment fit and aptitude-treatment interaction models, learning environment perceptions have been found in eleven analyses to account for a median of 30% of the variance in cognitive, affective, and behavioral post-course measures beyond that accounted for by parallel precourse measures. (By contrast, IQ measures have been found to account for a median of 7% of learning variance). Walberg asserts that students can perceive and consider environmental stimuli and appraise classroom climate, and that perceptual measures are a rich and accurate source of data in the examination of person-environment congruence and its effect on learning.
Actual-Preferred Learning Environment Congruence

An exploration of the congruence between the actual and preferred responses to classroom environment instruments appears to be one method of describing and understanding the person-environment fit paradigm. Nearly four decades ago, Pace and Stern (1958) called for an examination of the congruence between students' needs and environmental press, thought then to be most influential in student performance and satisfaction. Walberg (1976, p. 149) proposed that individuals have a more positive perception of those settings that match their preferences, and that those individuals function better within the setting. Relatedly, Moos (1979, p. 196) reviewed an extensive body of research in which a number of significant findings emerged. Student satisfaction and interest in the subject matter was enhanced when learning environments had more emphasis on the relationship and innovation dimensions. Higher achievement gains by students were associated with environments stressing goal orientation and system maintenance dimensions. Learning environments perceived to be high in teacher control contributed to student dissatisfaction. When components of the relationship dimension were emphasized along with a well-structured, orderly environment, increased gain on traditional academic measures occurred. The total pattern of congruence between students personal needs and the environmental press may have had greater impact on these findings than separate aspects of either the persons or the environment.

It is important to note that there are many concerns related to the issue of actual-preferred congruence. For instance, while some students may find classroom
structure and organization essential, others may find these dimensions to be stifling of independence and intrinsic motivation. Some individuals may prefer environments that are comforting and satisfying, although these environments may not challenge or contribute to long-range educational goals. Furthermore, student and faculty opinions of ideal learning environments may change over time. Stern (1962, p. 727) cautioned that although there is documentation regarding the importance of establishing congruence between student needs and environmental press, there must be clear examination of the consequences of practices based on preference rather than purpose. Stern summarized this dilemma by the following statement: "An environment must be suited to the species; if it isn’t, the organism either dies or goes elsewhere. But what is an optimal environment...one that satisfies or one that stimulates?"

In an empirical investigation of the impact of actual-ideal congruence, Fraser & Fisher (1983) used the ICEQ with 116 classes in an attempt to demonstrate that student achievement is greater in class having a similarity between the actual and preferred environment. In order to explore the relationship between achievement, actual environment, and actual-preferred congruence, three cognitive measures, six affective measures, and a number of related variables including student ability were examined. The design of the study involved prediction of post-test achievement from pretest performance, general ability, five ICEQ variables, and five actual-preferred interaction variables. Student general ability scores were obtained, and achievement was measured both at the beginning and end of the year using the outcome measures. The actual and preferred versions of the ICEQ was administered at mid-year, and
subsequently the scores of the congruence between the actual and preferred environments were obtained. Overall, the findings suggested that actual-preferred congruence was as important as perceptions regarding the actual environment in the prediction of student achievement. It is important to consider again, however, that these results are based on the perceptions and the achievement of the class as a whole, and are not reflective of any particular student within the classroom.

Recently, a research team investigated the effect of student learning styles in higher education on perceptions of the actual-ideal congruence within the learning environment. Winston, Vahala, Nichols, Gillis, Wintrow, and Rome (1994) constructed the College Classroom Environment Scale (CCES) with 6 scales: 1) cathectic learning climate, 2) professorial concern, 3) inimical ambiance, 4) academic rigor, 5) affiliation, and 6) structure. After documenting adequate instrument reliability and validity, responses to this instrument along with responses to the Learning Style Inventory were correlated. Results indicated that student perception of classroom climate was independent of learning styles. Additionally, when the data from the real and ideal forms of the instrument were analyzed, a halo effect was noted. Although there was a similar response pattern, the scales of ideal version were more highly correlated than the real scales. The authors postulate that this effect may have been seen because the ideal scale was viewed as a hypothetical entity to the respondents.
Student-Teacher Discrepancy Regarding the Learning Environment

Another approach to the study of person-environment congruence involves an examination of the agreement between student and teacher perceptions of the classroom. A portrayal of the discrepancy scores between teachers and students within a classroom can highlight the similarities and differences between these groups according to what is actually perceived in the classroom environment and what is ideally desired. This data can indicate changes desired by students and teachers. Results can direct interventions when the teacher and students agree on the direction of desired change. However, if there is disparity between the teacher and the students in particular scales of the actual-preferred discrepancy scores, careful consideration must be given to the underlying educational issues and desired learning outcomes of the setting.

In an early study, Moos and Trickett (1974) compared student and teacher profiles of actual and preferred environment scores in 50 classrooms using the CES. The subscale means and standard deviations indicated that students and teachers tended to agree on the characteristics of ideal classroom settings. The main exceptions were that teachers wanted more emphasis on task orientation and rule clarity than did students. Additionally, large real-ideal discrepancies were noted among students and teachers who both desired more emphasis on involvement, affiliation, teacher support, order and organization, and innovation than what currently existed in their classes. Later, again using the CES, Moos (1979, p. 147) contrasted 295 teacher and student profiles of actual and preferred classroom
environment. These profiles displayed a pattern in which preferred environment scores of both students and their teachers were higher than the actual scores. Additionally, teacher actual environment scores were higher than student actual scores for eight of the nine CES scales.

More recently, Raviv, Raviv, and Reisel (1990) used the CES to examine the congruence between student and teacher learning environment perceptions with 78 classes of sixth graders. For each subscale, these researchers performed a 2x2 analysis of variance procedure (one factor was the real or ideal form of the questionnaire, the other factor was the teacher or student position of the respondent). For each subscale, there were 5 comparisons of interest; the interaction effect as well as the four main effects. Teachers and students tended to exhibit greater agreement on perceptions regarding the ideal environment than the actual environment. Results showed that both teachers and students emphasized involvement, innovation, and order and organization as important components of the ideal environment. Both also viewed competition, teacher control, and task orientation as less important components of the ideal environment. Regarding the actual environment, teachers perceived more involvement and teacher support than students. Teachers and student actual ratings were most similar on the affiliation subscale.

Fraser (1981b) presented a method of representing information regarding actual and preferred classroom environment scores, using discrepancy scores that are obtained by subtracting the mean of the actual environment perceptual scores on each of the subscales from the corresponding mean of the preferred environment subscale.
scores. The distances between the mean scores indicates the requisite increase or
decrease in emphasis in each area for the class to become as respondents would prefer
it to be. A positive score indicates a desire for increased emphasis on that scale,
whereas a negative score indicates less emphasis desired regarding that scale. Using a
similar technique with the CES, Darkenwald and Gavin (1987) measured actual-ideal
discrepancy scores for various student groups, and with the mean of those scores ran
paired t-tests, allowing for the discovery of significant differences among the mean
scores of the groups.

Fraser (1981b) outlined another procedure for investigating student-teacher
congruence using the ICEQ. In his study, he employed a four-level repeated
measures design; inclusive of the student actual, student preferred, teacher actual, and
teacher preferred forms of the instrument. He conducted a series of t-tests for the
dependent samples in order to obtain pairwise comparisons between the two different
instrument forms. There were three main conclusions using this approach from this
investigation: 1) in comparison to the emphasis they perceived as being actually
present, both teachers and students tended to prefer a greater emphasis on four out of
the five scales; 2) teachers tended to perceive the actual environment as more positive
than the students in the same classroom; and 3) students tended to prefer greater
independence than was actually present in the classroom, while teachers considered
the actual independence emphasis appropriate.

In another approach within the college setting, Fraser and Treagust (1986)
employed a one-way repeated level multiple analysis of variance procedure for the
four level variables of response forms of the CUCEI: student actual, student ideal, faculty actual, and faculty ideal. The use of Wilk's lambda criterion revealed a significant difference among the four forms. A series of dependent samples was used to test pairwise comparisons between the different forms. Results indicated that students preferred more emphasis on each dimension other than personalization, and instructors preferred more emphasis on all seven dimensions. Additionally, teachers perceived a more positive actual environment on the scales of involvement, cohesion, and satisfaction than did students.

Learning Environment Instruments as Feedback Mechanisms

Clearly, an exploration of the learning environment has value in addition to describing the dynamics of the classroom. Perceptual information can also be used to facilitate change in the environment, leading to increased satisfaction with the conditions created for positive learning experiences in the educational setting.

Environmental assessment data can be utilized by teachers in the planning, implementation and evaluation of educational improvement plans (Walberg, 1982, p. 301). Classroom environment research can have a direct practical application in facilitating environmental change; perceptual data can guide the improvement of classroom environments (Fraser, 1981c). Acting as researchers and self-evaluators of their own classrooms, educators can use valuable feedback provided by learning environment instruments.

A five-step procedure has been outlined by Fraser (1986) in the use of learning environment instruments as feedback mechanisms: 1) the actual and preferred versions
of a chosen environment instrument are administered to students, 2) feedback from the instruments highlighting differences between the nature of the perceived actual environment and the preferred environment are obtained, 3) an examination of individual items within the instrument is conducted by the teacher, 4) reflection and discussion exposes change strategies that are then initiated, and 5) the actual form of the instrument is readministered in order to document changes in student perceptions regarding the actual classroom environments.

This five-step assessment and feedback procedure was empirically tested by Fraser (1986), using the actual and ideal forms of the CES with 22 classes of ninth grade students in science classes. Following an examination of student perceptions regarding actual and preferred components of the learning environment, teachers attempted to change the environment according to observed discrepancies. The actual form of the instrument was subsequently readministered. Statistically significant differences were detected between the perceptual scores of the initial and repeated actual version of the instrument. These findings are noteworthy because two of the dimensions on which appreciable changes were recorded were those on which the teacher had attempted to promote change.

In an earlier investigation, DeYoung (1977) used the short form of the CES to effect positive classroom environment changes in a undergraduate social science class. DeYoung administered the instrument to 25 students and obtained a profile of the mean class perceptions of the actual and preferred environment. Discrepancy scores indicated that students wanted more involvement, greater emphasis on innovative
teaching methods, and clearer notions about the organization and direction of the class. De Young then modified his teaching approach in a subsequent class of 34 students four months later, concentrating on those individual CES items that showed the greatest degree of actual-preferred discrepancy. De Young administered the actual and preferred forms of the CES to the second class as well, and although the social climate preferred by the students in the two classes were virtually identical, there were great differences in their perceptions of actual learning environments. Students in the second class perceived higher emphasis on the three dimensions desired by students in the first class, which were the dimensions De Young had attempted to change. Additionally, De Young found that the changes perceived by the second class were linked to greater student interest and participation and a higher student attendance rate. The differences between the actual perceptions of the first and second classes indicated that it is possible to modify the learning environment and also emphasized the instructor’s role as a facilitator of learning.

In an later study, Waters (1983) used the CES to determine areas of desired change in the classroom learning environment of 33 college students. The ideal form of the instrument was administered during the first week of the quarter, and the real form was administered at both midquarter and the end of the quarter in order to obtain discrepancy scores. Findings indicated students’ desire for more emphasis on innovation, affiliation, and teacher support; and slightly more emphasis on rule clarity in the classroom. Students appeared satisfied with the current level of task orientation, order and organization, teacher control, and competition. From these
findings, plans were formulated to increase emphasis on the desired areas, and changes in the environment were implemented. At the end of the quarter, most changes occurred in the desired direction of the majority of the dimensions. However, students continued to desire more involvement and affiliation, and interestingly, more emphasis on innovation was present than was desired.

Conclusions Regarding Learning Environment Research

This literature review exposes a portion of the extensive empirical investigation into the learning environment by educators within the past three decades. Undoubtedly, when students come together in a learning group, they bring their own norms, values, attributes and abilities to the group aggregate. This aggregate, along with teacher and organizational variables, defines the culture of a class. Learning behavior occurs as the group members influence the collective environment and the environment influences the group members. The components within the learning environment are clearly multidimensional as are the broader environmental influences more distal to the actual classroom setting.

Learning environments have been conceptualized in accordance with the theoretical framework originally postulated by Lewin’s Field Theory and Murray’s idea of environmental press. The concept of the learning environment has been framed by the dimensions outlined by Moos and operationalized by a number of instruments, with each attempting to tap critical psychosocial components of the environment. These instruments have been developed using similar procedures, and although the scale formats vary, each have well-documented psychometric properties.
However, very few factor analytic studies addressing the inherent structure of the instruments are available, and the findings from existing factor analytic investigations are inconsistent.

To date, the majority of learning environment instruments are intended for primary and secondary level classroom settings. A number of investigations employ learning environment instruments to evaluate the relationship of student and teacher characteristics, subject matter, and student morale and satisfaction to perceptions of the learning environment, that together impact personal and academic gains. For the most part studies are descriptive and correlational. However, notable exceptions have documented cognitive, affective, and behavioral learning gains that are attributed to learning environment variables.

Actual and preferred forms of learning environment instruments have allowed an examination of the congruence between components of the learning environment that individuals perceive to actually exist, and components that they ideally desire in the environment. There have been consistent findings of discrepancy between the actual and preferred perceptions of the learning environment by members of learning groups, varying according to the components of the environment measured by particular instruments. When groups of student perceptions are compared with teacher perceptions, teachers have been found to rate desirable components of the learning environment as occurring more frequently in the actual environment. Investigators have consistently noted little discrepancy between students and teachers regarding perceptions of the preferred learning environment. In important application
to educational practice, empirical study has documented the utility of learning environment instruments in the provision of feedback information that can be taken into account when teachers attempt to modify instructional practices and enhance classroom learning.

If the creation of classroom environments conducive for learning is a goal in the educational setting, consideration must be given to those conditions in the environment that can maximize personal and academic success, and that are capable of modification. Although teachers and students within an educational setting can modify components of the learning environment, they first must examine existing aspects and define ideal qualities of the environment. The impact of the environment on the process of learning is clearly significant, and continued investigations must document its effect on educational outcomes. It is essential to have instruments that can adequately assess student and faculty perceptions and expectations.

A quote by Nielsen & Kirk, (1974, p. 75) can summarize the issues addressed in the review of learning environment literature:

The real payoff comes when instruments can successfully be used as predictors of learning, and that requires explanatory as well as descriptive research. We need theories that specify which aspects of the environment are critical to learning and which are not; theories that specify the processes by which environment affects learning; theories that will test our ideas of what constitutes a "good" learning environment. And these theories need systematic testing. Educational climate research has achieved a certain maturity over the past forty years. But many why, how, when, and where questions still need to be answered in order to make this body of research of lasting value to evaluators of educational performance.
Review of Related Literature: Clinical Post-Conference

Although there is extensive research regarding classroom learning environments in the literature, the current proposed study is initiated because research regarding the learning environment in the conference setting is nearly nonexistent. Additionally, although much research regarding the learning environment has been conducted in primary and secondary classrooms, there are relatively few investigations in the post-secondary educational setting. The focus of this study is the learning environment as perceived by students and faculty in the post-conference setting of undergraduate nursing clinical courses.

In undergraduate nursing education, clinical post-conference has been defined as a "clinically focused conference attended to by nursing faculty and the students in their clinical group following a clinical laboratory experience" (Mitchell & Krainovich, 1982). Nursing educators have published ideas, techniques, and opinions for the use of post-conference time in nursing education. None of these articles acknowledge the existence or explore the impact of the learning environment in clinical post-conference. Overall, as Mc Cabe (1985) notes, there is a fundamental lack of research regarding the approach of clinical faculty to components of the clinical experience, including the use of post-conference time. However, Mc Cabe highlights a study published in 1981 that examined clinical teaching skills and practices in nursing, medicine, and dentistry that found conference to be the most frequently used instructional strategy. While some similarity exists among the views
of educators regarding conferencing, others differ in their approach to this teaching method.

Specific discussion of post-conference in nursing education was first published in the nursing literature by Matheney (1969). Ms. Matheney's seminal article highlights purposes, content areas, and rules for post-conference. This commentary continues to be cited as a reference in current nursing literature regarding post-conferencing. Prior to this publication, Lister (1966) exposed the clinical conference as a mechanism for enhancing clinical learning. Lister noted that student participation in conference is essential, and that the conference setting provides a vehicle for student synthesis of their learning.

Post-conference is a uniquely challenging teaching method for nursing educators. DeYoung (1990) highlights inherent difficulties with post-conferencing including: 1) the potential for unstructured discussions to be seen as trivial or boring by students and faculty, and 2) the potential for low energy levels by participants during post-conference, as the conference typically follows exhausting clinical experiences. Ideally, De Young envisions activities in post-conference that assist in student application of learned theory to actual clinical practice. She maintains that each post-conference should be grounded on specific objectives that correlate with objectives for the clinical laboratory experience.

Reilly and Oermann (1990, 1992) examine post-conference as an educational method directly related to the clinical experience. These authors believe that students can benefit from post-conference in the following ways: increased self-confidence,
improved skills with group process, enhanced capacity for clinical decision-making and judgement, and heightened cognitive skill development. These outcomes are related to suggested activities for post-conference, including: group discussion regarding clinical issues and concerns, group problem solving, group debate, group and individual reflection, and peer review. They also consider post-conference to be an additional method of evaluation for clinical faculty. Other authors (Mitchell & Krainvoich, 1982) outline the following educational activities for post-conference: 1) problem solving, 2) sharing clinical experiences, 3) review and critique of clinical activities, 4) discussion of clinical practice issues and concerns, and 5) examination of clinical-decision making behaviors. Recently, Wink (1995) stated that clinical conferences are believed to impact critical thinking and clinical decision-making skills. She outlines three characteristics of effective clinical conferences: 1) it is a group event, 2) it contributes to the achievement of course and clinical objectives, and 3) it provides a setting for students to explore feelings and attitudes related to client care.

Several nursing educators outline particular teaching techniques to be used in post-conference. In an early discussion, Plummer (1974) highlighted the following activities of the faculty as group discussion leader: 1) select a suitable topic, 2) convert the problem to a question, 3) prepare for the discussion, and 4) create and maintain a climate that will stimulate student thinking. During that same time, Krawczyk (1978) viewed post-conference as an inherent part of the nursing curriculum and she suggested the use of the case study technique to incorporate the
concepts of the curriculum during post-conference time. Additionally, Krawczyk believed that students must be responsible for relating theoretical learning to clinical situations. During post-conference, Krawczyk maintained that student participation can enhance learning. In a later publication, Skurski (1985) highlighted her method of the use of imagery to enhance post-conference discussions and learning. More recently, Copeland (1990) has noted that post-conference is an ideal setting to increase student confidence levels, by examining the beneficial learning aspects of the clinical day. In one other current publication, DiRenzo (1992) stresses the importance of conference time in nursing education as a method of applying theoretical learning to clinical situations. As a group process, she sees conference time as an ideal setting for group problem-solving processes.

Other educators discuss affective learning that can be enhanced during clinical post-conference. Horsfall (1990) believes that post-conference, as a group process, can be used as a "debriefing" experience. It is her opinion that students should be provided with a supportive environment during post-conference in order to examine their emotional experiences related to clinical learning. Horsfall encourages educators to empower student during post-conference, allowing them to determine the content and pace of the sessions. A similar approach is recommended by Werner-McCullough and L'Orange (1985), who believe that an informal atmosphere provides the most conducive environment for post-conference. Additionally, these authors see value in the group process, whereby students learn from each other. They suggest
four creative approaches to post-conference, including: 1) group problem solving, 2) nursing rounds, 3) nonthreatening clinical testing, and 4) role playing.

Dissimilar opinions exist among faculty who de-emphasize the affective component of the post-conference session. Farley (1990) regards post-conference as a seminar which must be a structured event based on theory. She is not of the opinion that post-conference time be utilized as a simple rehash of the clinical day or sharing emotions and expressing feelings. Swendsen-Boss (1985) highlights three essential components of sessions following clinical experiences: the summarization of experiences, the application of theoretical knowledge to clinical practice, and the integration of experience. She does not discuss the incorporation of student attitudes, values, and feelings as an element of the post-conference experience.

In concluding the review of the literature regarding clinical post-conference, it is critical to note that although the above mentioned nursing educators have considerable teaching experience and have thoughtfully examined the use of post-conference time in nursing education, not one of these discussions is based upon empirical investigation. A thorough search of the nursing literature exposes only one research-based article related to post-conference in nursing education, published by Wink in 1992. Wink's doctoral dissertation explores the use of a program that is intended to raise the level of questioning by faculty and students in post-conference. Several other doctoral dissertations that do not appear in the published literature involve the verbal interactions between faculty and students during post-conferences
Importantly, in light of the anecdotal nature of the available published literature regarding clinical post-conference, two nursing educators (Woolley & Costello, 1987) propose that there is not sufficient evidence supporting the effectiveness of post-conference as a teaching method. They encourage nursing educators to initiate scientific inquiry that empirically supports the use of clinical post-conference in nursing education. It is clear that with the fundamental lack of prior study, initial attempts at empirical investigation regarding clinical post-conference will be exploratory and descriptive in nature. The present examination focuses on the learning environment perceived by students and faculty during clinical post-conference in an attempt to provide a foundation for future investigations that can support the effectiveness of this teaching method for valued learning outcomes.

Research Questions

The purpose of this study is to explore and describe undergraduate baccalaureate nursing student and faculty perceptions of clinical post-conference learning environments. The following content research questions are addressed in this study:

1) What are undergraduate baccalaureate nursing student perceptions regarding components of actual post-conference learning environments?

2) What are undergraduate nursing faculty perceptions regarding components of actual post-conference learning environment?
3) What are undergraduate baccalaureate nursing student perceptions regarding the importance of components of post-conference learning environments?

4) What are undergraduate nursing faculty perceptions regarding the importance of components post-conference learning environments?

5) Are there differences between undergraduate baccalaureate nursing students perceptions of the actual post-conference learning environment and the importance of components of post-conference learning environments?

6) Are there differences between undergraduate nursing faculty perceptions of the actual post-conference learning environment and the importance of components of post-conference learning environments?

7) Are there differences between undergraduate baccalaureate nursing student and faculty perceptions regarding components of actual learning environments?

8) Are there differences between undergraduate baccalaureate nursing student and faculty perceptions regarding the importance of components of post-conference learning environments?

9) Are there differences between junior and senior level nursing students in their perceptions regarding components of actual post-conference learning environments?

10) Are there differences between junior and senior level nursing students in their perceptions regarding the importance of components of post-conference learning environments?
Additionally, three psychometric research questions are asked regarding the instrument that was developed for this study:

1) Do the items for each of the subscales of the "Clinical Post-Conference Learning Environment Survey" have adequate Cronbach alpha coefficients?

2) Do the subscales of the "Clinical Post-Conference Learning Environment Survey" intercorrelate along the dimensions that theoretically frame this instrument, as suggested by Moos?

3) Does the "Clinical Post-Conference Learning Environment Survey" possess adequate temporal stability?
CHAPTER III

METHODS

Design

This study employed an exploratory descriptive survey research design. The student and faculty populations were surveyed regarding their perceptions of clinical post-conference learning environments by a written, self-report paper and pencil questionnaire during the 1994-1995 academic year. Respondents each received a structured questionnaire and recorded their responses directly on the questionnaire. Faculty were also asked to complete an additional questionnaire that elicited descriptive information regarding clinical post-conference.

Subjects

Undergraduate baccalaureate junior and senior level nursing students and faculty were chosen for inclusion in this investigation. The selection of the baccalaureate nursing population restricts generalization of the results of this study to post-conferences within associate and diploma schools of nursing. Three Schools of Nursing were chosen from the baccalaureate programs within the geographical areas surrounding Chicago, Illinois for participation in this research. In an attempt to enhance generalization of findings to other Bachelor’s of Science in Nursing programs, the chosen schools varied in size, legal structure, and location.
Recruitment of the subjects occurred initially by telephone contact with the selected School of Nursing Deans. During this conversation, a brief description of the study itself and the intended purposes and methods for the investigation were provided. Following institutional review board approval and approval from each dean to proceed with the study, letters were sent to faculty members at each institution that outlined the study and requested their participation in the investigation. In followup telephone conversations, arrangements were made for delivering, administering, and returning the surveys with those faculty members agreeing to participate. Following faculty endorsement of the study, students were then surveyed during large group lecture classes at each institution.

An attempt was made to sample 100% of the undergraduate students and faculty from each of the three participant schools. Nearly one hundred percent of the junior and senior nursing students at two of the three schools participated in this study. The response rate at the third school was smaller, with an approximate 41% response rate by junior and senior nursing students at that institution. Responses of faculty mimicked this pattern, with nearly one hundred percent of the undergraduate faculty at two of the three schools participating in the study. The undergraduate faculty response rate at the third school was approximately 62%.

For descriptive purposes, student demographic data regarding age, gender, and race was obtained (see Table 1). A one-way analysis of variance (ANOVA) calculation was done to compare the mean ages of the three schools’ student populations. The obtained F statistic was used to test and subsequently not reject the
hypothesis of equal population age means [F(2,646)=.67, p=.101]. Using the SAS statistical software package, the chi-square test for independence demonstrated no statistically significant differences between the schools’ students regarding gender [chi square(2)=1.28, p=.52] and race [chi square(5)=12.13, p=.14].

Demographic data regarding gender, race, and academic degree preparation was also noted of full-time faculty among the schools (see Table 2). Using SAS, the chi-square test for independence demonstrated no statistically significant differences between the schools’ faculty regarding gender [chi square(2)=.81, p=.66], race [chi square(6)=2.50, p=.86], and academic degree preparation [chi square(2)=3.76, p=.15].

Table 1.—Demographic Characteristics of the Student Samples

<table>
<thead>
<tr>
<th></th>
<th>School A</th>
<th>School B</th>
<th>School C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>n= 8</td>
<td>n= 15</td>
<td>n= 42</td>
</tr>
<tr>
<td>Female</td>
<td>n=71</td>
<td>n=201</td>
<td>n=406</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>n=65</td>
<td>n=161</td>
<td>n=375</td>
</tr>
<tr>
<td>Hispanic</td>
<td>n= 2</td>
<td>n= 11</td>
<td>n= 16</td>
</tr>
<tr>
<td>Black</td>
<td>n= 4</td>
<td>n= 8</td>
<td>n= 11</td>
</tr>
<tr>
<td>Asian</td>
<td>n= 8</td>
<td>n= 35</td>
<td>n= 40</td>
</tr>
<tr>
<td>NativeAmerican</td>
<td>n= 0</td>
<td>n= 1</td>
<td>n= 1</td>
</tr>
<tr>
<td><strong>Mean Age</strong></td>
<td>26 years old</td>
<td>24 years old</td>
<td>27 years old</td>
</tr>
</tbody>
</table>
Table 2. —Demographic Characteristics of the Faculty Samples

<table>
<thead>
<tr>
<th></th>
<th>School A</th>
<th>School B</th>
<th>School C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>n=0</td>
<td>n=1</td>
<td>n=0</td>
</tr>
<tr>
<td>Female</td>
<td>n=8</td>
<td>n=45</td>
<td>n=29</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>n=8</td>
<td>n=43</td>
<td>n=29</td>
</tr>
<tr>
<td>Hispanic</td>
<td>n=0</td>
<td>n=1</td>
<td>n=0</td>
</tr>
<tr>
<td>Black</td>
<td>n=0</td>
<td>n=1</td>
<td>n=0</td>
</tr>
<tr>
<td>Asian</td>
<td>n=0</td>
<td>n=1</td>
<td>n=0</td>
</tr>
<tr>
<td>Native American</td>
<td>n=0</td>
<td>n=0</td>
<td>n=0</td>
</tr>
<tr>
<td>Academic Degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS/MSN</td>
<td>n=2</td>
<td>n=7</td>
<td>n=10</td>
</tr>
<tr>
<td>Doctoral</td>
<td>n=6</td>
<td>n=39</td>
<td>n=19</td>
</tr>
</tbody>
</table>

Measures: "Clinical Post-Conference Learning Environment Survey"

Conceptual Development of the Instrument

For this investigation, existing learning environment instruments were examined to determine applicability for use with this population in this setting. None of those instruments was found to be suitable or able to be adequately modified for this research. The decision was made to develop a learning environment instrument de novo for this study. The development of the survey was intended to provide a reliable and valid mechanism for describing dimensions of the post-conference learning environments, with subsequent potential utility in the monitoring and improvement of those environments. In the construction of the instrument, a primary design criterion was adequate coverage of Moos’ classification scheme, using the three broad dimensions of: relationship, goal orientation, and system maintenance and
Each subscale was inspected for its applicability to the clinical post-conference setting. Extensive review of the education and nursing literature and observation of clinical post-conference also supported the decision to incorporate specific subscales in the newly developed clinical post-conference instrument. The following outline highlights the conceptual framework chosen for this research that provided a foundation for the initial operationalization of the instrument:

Table 3.--Conceptual Framework: Clinical Post-Conference Learning Environment Survey

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Subscales</th>
</tr>
</thead>
</table>
| **Relationship dimension:** identifies the nature and intensity of personal relationships within the environment, and the extent to which people support and help each other. | **involvement** extent to which participants are attentive, interested, and active participants in discussions and activities  
**cohesion** level of affiliation and unity among members of the group  
**teacher support** extent to which the group members feel that the behaviors of the instructor are supportive of themselves and their learning |
| **Goal Orientation dimension:** assesses emphasis on completing curricular activities and instructional goal attainment | **task orientation** emphasis on subject matter and planned activities which promote learning |
| **System Maintenance and Change dimension:** identifies the extent to which the environment is orderly, clear in expectations, has variety and novelty | **order and organization** emphasis on orderly behavior and overall organization of conference activities and discussions  
**innovation** extent to which there is variety and use of different teaching methods |
Generation of Item Pool

From this conceptualization, an item pool was generated by thorough review of the literature, clinical post-conference observations, and discussion with content experts. Although items from existing learning environment instruments were examined, none was directly incorporated in the clinical post-conference learning environment survey’s item pool. Care was taken to create items that reflected the content domain of the subscale from which it was derived. Slight redundancy among items within a subscale was allowed in an attempt to comprehensively uncover the subscale’s construct. Lengthy, double-barrel, ambiguous, and negatively worded items were avoided.

Determination of Format for Measurement

Ten statements were chosen for each of the six subscales, resulting initially in a 60 item instrument. The items are arranged in a cyclic order in blocks of six. Within these blocks, an item belonging to the first subscale is placed first, an item from the second subscale is placed second, and so forth through the sixth item. The sequence then repeats itself ten times. In contrast to other learning environment instruments that employ dichotomous measurement ratings, a 7-point Likert scale was selected for this instrument in an attempt to counter the bias of central tendency.

Two parallel response forms are included within the instrument for each statement; an "actual" rating column and an "importance" rating column. Combining these two parallel forms on the single instrument is intended to allow for immediate rating discrimination by the respondent. This approach differs from existing
instruments that have separate forms which are typically administered on different days. Additionally, other learning environment instruments assess the "ideal" ratings rather than the perceived "importance" ratings of the participants. The different connotation was desired for this research, as it was anticipated that in this study population, little variance if any would be detected among faculty and students regarding an ideal conference learning environment. It was anticipated that "importance" responses would, in contrast, delineate those components of the environment seen by respondents as most critical in this setting.

Content Validity Assessment

An assessment of the content validity of the instrument was conducted. Ten content experts, including two nursing students, were selected to review the Clinical Post-Conference Learning Environment Survey. Eight of the content experts were nursing faculty members with documented expertise in clinical teaching. The chosen experts were provided with an overview of the study, necessary definitions for the study, an outline of the three dimensions and six subscales forming the foundation for the instrument, and a sample format of the instrument (see Appendix A).

Qualitative content assessment was obtained by asking the experts to respond to the following questions: 1) Do the six subscales appear to be applicable to the dimensions in which they are placed?, 2) Do any of the ten questions belong with another subscale category rather than the one in which they are placed?, 3) Are any items/questions missing from the subscale categories?, 4) Are there any items/questions which you find completely inapplicable for this tool?, 5) Is the
response format appropriate?, 6) Can you clearly differentiate the directions between the actual and importance categories?, and 7) Do you have any other comments or suggestions? Quantitative content validity was obtained with the use of the Content Validity Index (Lynn, 1986). Each content expert received a separate list of the six subscales placed with the respective ten statements supporting that subscale. Experts were asked to rate the relevancy of each question on a 4-point Likert scale: (1) not relevant, (2) somewhat relevant, (3) quite relevant, and (4) very relevant. On review of the expert ratings, percentage of agreement regarding each item’s relevancy was obtained. One item in each subscale was subsequently eliminated due to low relevance ratings. In its current form, the "Clinical Post-Conference Learning Environment Survey" (see Appendix B) contains 54 items.

Measures: "Faculty Descriptors of Post-Conference"

In conjunction with the development of the post-conference learning environment instrument, the "Faculty Descriptors of Post-Conference" survey was constructed to depict selected aspects of clinical post-conference by faculty of participant schools for descriptive purposes (see Appendix C). This brief tool appraises the following: 1) the current educational level of student taught by the faculty respondent, 2) the typical frequency of post-conference, 3) the typical duration of post-conference, 4) the current number of students in the clinical group, and 5) the frequency usage of fifteen post-conference activities, measured by a five-point Likert scale.
Procedure

Because it was anticipated and desired that respondents rate their impressions of the post-conference learning environment according to collective experiences over many post-conference sessions, the survey was administered to students and faculties near the end of a current clinical course at each institution. Members of the faculties received their surveys by mail and then completed and returned the surveys to a designated location within the institution at their convenience. The instructions for completion of the instrument appear at the top portion of each survey. The directions appeared to be understandable and comprehensive, with no apparent difficulty encountered in the administration of the tool. In addition to being written, the directions were also read aloud when the instrument was distributed to students. Approximately twenty minutes were needed for completion of the survey.

Students received and completed the surveys in the classroom setting according to arrangements made between the faculty and the investigator. In order to avoid response bias by students, faculty members who distributed the surveys were provided with a manilla envelope and instructed to seal the envelope immediately following the students’ return of the surveys.

To document the temporal stability of this instrument, a test-retest procedure was conducted by readministering the instrument to approximately ten percent of the student population two weeks following the initial administration of the instrument. The test-retest population responded to the surveys during prearranged clinical post-conferences. The population was a sample of convenience as only one participant
school was involved in this procedure. The two week time period was selected because the duration of the clinical course is seven weeks at that institution.

Informed consent was obtained from participants in this research according to Institutional Review Board for Protection of Human Subjects protocol and study approval (see Appendix D). A description of the study and its intended purposes were provided to students and faculty. Participants were assured of confidentiality and anonymity, as data was coded by identification numbers only according to: 1) the participant’s school and 2) the participant’s status as faculty or student. A clear description of the procedure for the study and the potential benefits of participation were provided. There were no foreseeable risks to individuals involved in this research. Subjects were informed that participation in the study was purely voluntary and that there would be no penalty if they chose not to complete the instrument.

Data Entry Procedures

For data entry purposes, a data entry screen was created in the dbase statistical program. The following identifying characteristics of each respondent’s survey were recorded at the top of each entered survey: the participant’s previously established survey identification number (from 001 to 899), the participant’s status (J=junior nursing student, S=senior nursing student, or F=faculty), and the participant’s school (L=School A, N=School B, E=School C).

The dbase program screen was constructed to resemble the actual printed "Clinical Post-Conference Learning Environment Survey". Each of the 54 statements was written on the screen as a slightly condensed version of the actual instrument.
Additionally, instead of the 7-point Likert scale on the survey, the dbase data entry screen simply allows for the respondent’s one circled choice on the actual and the important scales to be recorded in the actual and importance columns.
CHAPTER IV

RESULTS

Data Cleaning Process

All study data entered into the statistical program was verified for accuracy in recording by a 100% hand check of the raw data printout. Frequency distributions and descriptive statistics of the raw data uncovered information regarding: 1) the participant’s school, 2) the status of the participant as a junior nursing student, senior nursing student, or faculty member, and 3) the responses to each item of both the actual and important scales of the instrument. There were 501 valid cases recorded at the conclusion of data entry.

Missing data had been recorded by leaving the dbase screen blank. For data analysis, SPSS-PC then viewed the missing data and deleted the case listwise as had been anticipated. In the listwise deletion procedure, any item(s) detected to be missing on an subscale causes subsequent deletion of that entire subscale score for that respondent. On examination of the missing data, two of the schools had one student respondent that did not complete the entire last page or the entire last column of the instrument. A pattern was noted regarding specific statements left blank by survey respondents. Each school had missing data in the responses to the statement regarding the incorporation of "novel" approaches in post-conference, intended to measure the innovation dimension. The statement, "post-conference is conducted in
an organized manner" also yielded missing responses by students in each school. Overall, the missing data was infrequent (a total of 79 items out of 55,000 entered items) and appeared in a random pattern.

Frequencies and Descriptive Statistics of Calculated Scores

The items contained in the post-conference learning environment survey are arranged in a cyclic order in blocks of six, in order to measure the six subscales contained within the instrument. The accuracy of the variable transformation statements was verified first by examining the statements themselves for error. To assure correct calculated scores, hand computations of the transformed variables were performed and checked against computer generated values. The designated subscales were combined correctly by the SPSS-PC program.

Data Plots of Calculated Scores

Histograms, normal plots, and detrended normal plots were utilized to note normal distribution of the sample population. The actual subscale histograms appeared on visual inspection to resemble bell-shaped curves, with slight negative skewness evident in the relationship dimension subscales. The importance subscale histograms exhibited patterns of negative skewness. Each subscale's normal plot clustered on an approximately straight line. No specific patterns appeared on the detrended normal plots of the subscale scores. The hypothesis of a normally distributed sample could be rejected because there were small observed significance levels for all but two of the subscales (actual order and organization, and importance innovation). However, as noted by Norusis (1990, p.b-104), "...it is important to
remember that whenever the sample size is large, almost any goodness-of-fit test will result in rejection of the null hypothesis. It is almost impossible to find data that are exactly normally distributed. For most statistical tests, it is sufficient that the data are approximately normally distributed. Thus, for large data sets you should look not only at the observed significance level but also at the magnitude of the departure from normality. In this study, the Kolgov-Smirnov (K-S) statistical values were low for each subscale, indicating normal distribution of the data [KS (433) = .03-.16].

Because this is a newly created instrument, decision rules for outliers could not be based on previous distributions. Boxplots for each of the twelve subscales were examined for outlying and extreme cases. Four subscales had either one or no outliers: actual order and organization, importance order and organization, actual innovation, and importance innovation. Two subscales had eleven outliers: importance cohesion and actual teacher support; fourteen outliers were noted on the subscales of importance task orientation. On examination of the outlying case numbers, two were found to outlie on four subscales. All other outlying cases appeared to be randomly distributed. The decision was made to include all cases in the data analysis.

Mean Scores of Subscales

Frequency distributions of the subscale scores noted the responses given by students and faculty at each institution for each subscale within the actual and importance versions of the instrument (see Table 4). Within the total population, the highest ranked actual subscale was teacher support (mean = 49.4); the lowest was
innovation (mean = 35.0). In the total population, the highest ranked importance subscale was also teacher support (mean = 58.1); the lowest was also innovation (mean = 48.5). Each of the subscale means for the actual version of the instrument was lower than the mean of the corresponding importance version of the instrument.

The standard deviations of each of the subscales were examined for notable findings among students and faculty at each institution (see Table 4). Within the total population, the highest ranked standard deviation of the actual subscales was teacher support (SD = 11.2); the lowest was task orientation (SD = 9.3). Within the total population, the highest ranked standard deviation of the importance subscales was innovation (SD = 7.4); the lowest was teacher support (SD = 5.0). The actual subscales showed higher standard deviations than the importance subscales. For nearly all of the subscales, there was less variability among faculty than among students.

Table 4.—Mean Levels of Subscale Scores and Standard Deviations by School

<table>
<thead>
<tr>
<th>Subscale</th>
<th>School</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A (n=88)</td>
<td>B (n=232)</td>
<td>C (n=145)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean  SD</td>
<td>Mean  SD</td>
<td>Mean  SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual Involvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>42.4  7.7</td>
<td>42.8  11.3</td>
<td>44.3  10.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty</td>
<td>48.4  6.8</td>
<td>42.4  8.8</td>
<td>45.7  8.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance Involvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>52.6  6.6</td>
<td>53.2  7.1</td>
<td>52.6  6.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty</td>
<td>55.8  2.6</td>
<td>52.6  7.2</td>
<td>53.8  6.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual Cohesion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>48.1  8.4</td>
<td>47.6  10.9</td>
<td>48.4  11.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty</td>
<td>54.2  3.9</td>
<td>45.7  8.5</td>
<td>47.1  9.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance Cohesion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Student</td>
<td>55.3</td>
<td>5.3</td>
<td>55.9</td>
<td>6.7</td>
<td>54.9</td>
</tr>
<tr>
<td>Faculty</td>
<td>57.2</td>
<td>2.9</td>
<td>53.1</td>
<td>6.5</td>
<td>51.6</td>
</tr>
<tr>
<td>Actual Teacher Support</td>
<td>51.5</td>
<td>8.6</td>
<td>47.8</td>
<td>11.4</td>
<td>48.3</td>
</tr>
<tr>
<td>Student</td>
<td>57.1</td>
<td>5.4</td>
<td>53.9</td>
<td>6.5</td>
<td>56.1</td>
</tr>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance Teacher Support</td>
<td>58.5</td>
<td>4.0</td>
<td>57.6</td>
<td>5.4</td>
<td>58.2</td>
</tr>
<tr>
<td>Student</td>
<td>60.0</td>
<td>3.3</td>
<td>58.8</td>
<td>4.3</td>
<td>57.9</td>
</tr>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual Task Orientation</td>
<td>47.8</td>
<td>7.7</td>
<td>47.0</td>
<td>10.5</td>
<td>48.0</td>
</tr>
<tr>
<td>Student</td>
<td>50.4</td>
<td>8.7</td>
<td>49.5</td>
<td>7.4</td>
<td>52.4</td>
</tr>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance Task Orientation</td>
<td>55.5</td>
<td>5.4</td>
<td>55.8</td>
<td>6.2</td>
<td>53.2</td>
</tr>
<tr>
<td>Student</td>
<td>56.1</td>
<td>2.7</td>
<td>55.0</td>
<td>5.7</td>
<td>55.7</td>
</tr>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual Order Organization</td>
<td>43.7</td>
<td>8.2</td>
<td>44.6</td>
<td>10.4</td>
<td>46.7</td>
</tr>
<tr>
<td>Student</td>
<td>46.0</td>
<td>11.1</td>
<td>45.1</td>
<td>7.6</td>
<td>50.8</td>
</tr>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance Order Organization</td>
<td>53.3</td>
<td>6.2</td>
<td>53.0</td>
<td>6.9</td>
<td>51.1</td>
</tr>
<tr>
<td>Student</td>
<td>55.0</td>
<td>5.2</td>
<td>53.4</td>
<td>5.2</td>
<td>55.0</td>
</tr>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual Innovation</td>
<td>32.7</td>
<td>7.9</td>
<td>36.1</td>
<td>12.3</td>
<td>32.6</td>
</tr>
<tr>
<td>Student</td>
<td>38.0</td>
<td>8.9</td>
<td>41.6</td>
<td>8.0</td>
<td>37.6</td>
</tr>
<tr>
<td>Faculty</td>
<td>47.7</td>
<td>7.3</td>
<td>48.0</td>
<td>7.1</td>
<td>44.8</td>
</tr>
</tbody>
</table>

Statistical Testing of Psychometric Research Questions

Reliability of Subscales

Internal consistency of the actual and importance subscales of this instrument was evaluated by the Cronbach's alpha coefficient (see Table 5). The total alpha coefficient for the instrument was found to be $\alpha = .96$. Alpha coefficients for the
actual subscales include the following, ranked from lowest to highest: order and organization $\alpha = .87$, innovation $\alpha = .89$, task orientation $\alpha = .90$, involvement $\alpha = .91$, cohesion $\alpha = .93$, and teacher support $\alpha = .93$. Alpha coefficients for the importance subscales include the following, ranked from lowest to highest: innovation $\alpha = .83$, teacher support $\alpha = .82$, order and organization $\alpha = .86$, task orientation $\alpha = .87$, cohesion $\alpha = .88$, and involvement $\alpha = .87$. The reliability coefficients for each of these subscales is higher in the actual version of the instrument.

Inter item-correlations were examined for each subscale in both the actual and importance versions of the instrument (see Table 5). In each of the subscales, these correlations were acceptable, with mean ranges from .37 to .63. Importance subscale inter item-correlation values were lower than actual subscale inter item-correlations. The correlation matrix was also examined for each subscale, noting minimum and maximum values of correlations between each item of each subscale. The innovation importance scale, with the lowest mean inter-item correlation of .37, contains one item below the generally accepted criterion of .20. This item addresses the importance of post-conferences being conducted in different settings.
Table 5.—Reliability Estimates of Clinical Post-Conference Learning Environment Survey (n=433)

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean Coefficient</th>
<th>Alpha</th>
<th>Mean Inter-item Correlation</th>
<th>Pearson r (n=36)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Involvement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td>.91</td>
<td>.54</td>
<td></td>
<td>.96</td>
</tr>
<tr>
<td>Importance</td>
<td>.87</td>
<td>.45</td>
<td></td>
<td>.92</td>
</tr>
<tr>
<td><strong>Cohesion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td>.93</td>
<td>.60</td>
<td></td>
<td>.99</td>
</tr>
<tr>
<td>Importance</td>
<td>.88</td>
<td>.47</td>
<td></td>
<td>.98</td>
</tr>
<tr>
<td><strong>Teacher Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td>.93</td>
<td>.63</td>
<td></td>
<td>.97</td>
</tr>
<tr>
<td>Importance</td>
<td>.82</td>
<td>.37</td>
<td></td>
<td>.88</td>
</tr>
<tr>
<td><strong>Task Orientation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td>.90</td>
<td>.52</td>
<td></td>
<td>.97</td>
</tr>
<tr>
<td>Importance</td>
<td>.87</td>
<td>.45</td>
<td></td>
<td>.87</td>
</tr>
<tr>
<td><strong>Order &amp; Organization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td>.87</td>
<td>.44</td>
<td></td>
<td>.97</td>
</tr>
<tr>
<td>Importance</td>
<td>.86</td>
<td>.42</td>
<td></td>
<td>.95</td>
</tr>
<tr>
<td><strong>Innovation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td>.89</td>
<td>.48</td>
<td></td>
<td>.98</td>
</tr>
<tr>
<td>Importance</td>
<td>.83</td>
<td>.37</td>
<td></td>
<td>.95</td>
</tr>
</tbody>
</table>

Item to total statistics were examined to note patterns of mean scores, correlations, and variances between items within each subscale. In each of the subscales, item to total statistics detected items that if deleted could raise the alpha coefficient of that subscale. The following items were found to contribute the least to the corresponding subscale in both the actual and importance versions of the instrument: 1) for involvement: there is a lot of spontaneous discussion during post-conference, 2) for cohesion: members of this group are able to have candid discussions during post-conference, 3) for teacher support: this instructor identifies
areas of improvement that are needed by students in a constructive manner, 4) for task orientation: post-conference discussions and activities are related to theory classes, 5) for order and organization: post-conference starts on time, and 6) for innovation: this group meets in different settings for post-conference. For purposes of this investigation, the decision was made to retain all subscale items for data analysis of the research questions. Although slight differences in mean scores, correlations, and variances between items within each subscale were noted, these differences were not considered significant enough to delete items.

The item to total statistics also detected the items within each subscale that contributed to the subscale's reliability. The following items were found to contribute most highly to the corresponding subscale in both the actual and importance versions of the instrument: 1) for involvement, both: members of this group are interested in post-conference activities and discussions (actual scale) and members of this group put effort into post-conference discussions and activities (importance scale); 2) for cohesion: individuals feel accepted as a members of this clinical group during post-conference; 3) for teacher support, both: this instructor expresses confidence in students during post-confidence (actual scale), and this instructor emphasizes the positive aspects of the clinical experiences during post-conference (importance scale); 4) for task orientation both: post-conference activities enhance clinical learning (actual scale), and there is a purpose for each post-conference (importance scale); 5) for order and organization: post-conference is conducted in an organized manner; and 6) for innovation: students engage in unique activities during post-conference.
Reliability of Dimensions

To note construct validity, each of the six subscales of the actual form of the instrument was also evaluated by the Cronbach’s alpha coefficient for internal consistency with the theoretical dimension in which it is placed, using the total population (n=433). The relationship dimension, incorporating the subscales involvement, cohesion, and teacher support, yielded an alpha of .96. The goal orientation dimension, incorporating the subscale of task orientation, yielded an alpha of .90. The system maintenance and change dimension, incorporating the subscales of order and organization and innovation, yielded an alpha of .90. Mean inter-item correlations for the dimensions respectively were .493, .552, and .337.

Temporal Stability of the Instrument

The Pearson r correlation coefficient was employed on the test-retest population to note the temporal stability of the Clinical Post-Conference Learning Environment Survey (see Table 5). The following correlations were obtained, each with a 1-tailed significance of -.01 to -.001: Actual involvement, r=.96; importance involvement, r=.92; actual cohesion, r=.99; importance cohesion, r=.98; actual teacher support, r=.97; importance teacher support, r=.88; actual task orientation, r=.97; importance task orientation, r=.87; actual order and organization, r=.97; importance order and organization, r=.95; actual innovation, r=.98; importance innovation, r=.95.
Statistical Testing of Content Research Questions

Student and Faculty Perceptions of Actual and Importance Subscales

The means of the actual and importance subscales were rank ordered to display the perceptions of the actual components of the environment and the perceptions of the importance of components of the environment for students and faculty in the total population (See Tables 6, 7, 8, and 9). The subscale of innovation was ranked lowest in both the actual and importance versions of the instrument by both students and faculty. The subscale of teacher support was ranked highest in both the actual and importance versions of the instrument by both students and faculty. Students’ rankings of both actual cohesion and the importance of cohesion were ranked second to highest, with involvement and order/organization ranked second and third lowest. Faculty rankings of both actual task orientation and the importance of task orientation were ranked second to highest, with involvement ranked second and third lowest. With the exception of the subscale of cohesion, faculty mean scores on the actual subscales were higher than student mean scores on the subscales. For the importance subscales, faculty mean scores on the subscales of involvement, order and organization, task orientation, and teacher support were higher than student mean scores. Faculty mean scores on the importance subscales of innovation and cohesion were lower than student mean scores.
Table 6.—Ranked Frequency Distributions of Actual Subscale Scores: Student 
(n=404)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Subscale</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teacher Support</td>
<td>49.0</td>
</tr>
<tr>
<td>2</td>
<td>Cohesion</td>
<td>48.2</td>
</tr>
<tr>
<td>3</td>
<td>Task Orientation</td>
<td>47.7</td>
</tr>
<tr>
<td>4</td>
<td>Order &amp; Organization</td>
<td>45.3</td>
</tr>
<tr>
<td>5</td>
<td>Involvement</td>
<td>43.5</td>
</tr>
<tr>
<td>6</td>
<td>Innovation</td>
<td>34.5</td>
</tr>
</tbody>
</table>

Table 7.—Ranked Frequency Distributions of Actual Subscales Scores: Faculty 
(n=56)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Subscale</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teacher Support</td>
<td>55.0</td>
</tr>
<tr>
<td>2</td>
<td>Task Orientation</td>
<td>50.5</td>
</tr>
<tr>
<td>3</td>
<td>Cohesion</td>
<td>47.2</td>
</tr>
<tr>
<td>4</td>
<td>Order &amp; Organization</td>
<td>47.0</td>
</tr>
<tr>
<td>5</td>
<td>Involvement</td>
<td>44.2</td>
</tr>
<tr>
<td>6</td>
<td>Innovation</td>
<td>39.8</td>
</tr>
</tbody>
</table>
Table 8.—Ranked Frequency Distributions of Importance Subscales Scores: Student (n=404)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Subscale</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teacher Support</td>
<td>58.0</td>
</tr>
<tr>
<td>2</td>
<td>Cohesion</td>
<td>55.5</td>
</tr>
<tr>
<td>3</td>
<td>Task Orientation</td>
<td>55.0</td>
</tr>
<tr>
<td>4</td>
<td>Involvement</td>
<td>52.9</td>
</tr>
<tr>
<td>5</td>
<td>Order &amp; Organization</td>
<td>52.4</td>
</tr>
<tr>
<td>6</td>
<td>Innovation</td>
<td>48.6</td>
</tr>
</tbody>
</table>

Table 9.—Ranked Frequency Distributions of Importance Subscale Scores: Faculty (n=56)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Subscale</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teacher Support</td>
<td>58.6</td>
</tr>
<tr>
<td>2</td>
<td>Task Orientation</td>
<td>55.3</td>
</tr>
<tr>
<td>3</td>
<td>Order &amp; Organization</td>
<td>54.1</td>
</tr>
<tr>
<td>4</td>
<td>Involvement</td>
<td>53.4</td>
</tr>
<tr>
<td>5</td>
<td>Cohesion</td>
<td>53.1</td>
</tr>
<tr>
<td>6</td>
<td>Innovation</td>
<td>46.9</td>
</tr>
</tbody>
</table>

Differences in Student and Faculty Perceptions between Actual and Importance Subscales

Paired sample t-tests were employed to note differences across perceptions of the actual components of the environment and the perceptions of the importance of components of the environment among both student and faculty populations. Initially,
a paired t-test between each actual and importance scale was run on the entire population (see Table 10). Significant differences were detected in each of paired subscales. The correlation values between each pair of subscales ranged from .37 to .58.

Table 10.—Paired t-tests Between Perceptions of Actual Subscales and Perceptions of Importance Subscales: Total Population (n=457)

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Importance Mean</th>
<th>Importance SD</th>
<th>Actual Mean</th>
<th>Actual SD</th>
<th>t-value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involvement</td>
<td>53.0</td>
<td>6.8</td>
<td>43.3</td>
<td>10.2</td>
<td>-24.68</td>
<td>.001</td>
</tr>
<tr>
<td>Cohesion</td>
<td>55.2</td>
<td>6.5</td>
<td>47.9</td>
<td>10.5</td>
<td>-17.71</td>
<td>.001</td>
</tr>
<tr>
<td>Teacher Support</td>
<td>58.1</td>
<td>5.0</td>
<td>49.6</td>
<td>11.1</td>
<td>-18.36</td>
<td>.001</td>
</tr>
<tr>
<td>Task Orientation</td>
<td>55.0</td>
<td>6.1</td>
<td>47.9</td>
<td>9.3</td>
<td>-18.16</td>
<td>.001</td>
</tr>
<tr>
<td>Order &amp; Organization</td>
<td>52.7</td>
<td>6.7</td>
<td>45.3</td>
<td>9.4</td>
<td>-16.72</td>
<td>.001</td>
</tr>
<tr>
<td>Innovation</td>
<td>48.5</td>
<td>7.4</td>
<td>35.0</td>
<td>11.1</td>
<td>-26.43</td>
<td>.001</td>
</tr>
</tbody>
</table>

Paired t-test were also used to detect differences within the same groups at each institution (junior-level students, senior-level students, faculty) across perceptions of the actual components of the learning environment and the perceptions of the importance of components of the learning environment. Because of repeated statistical testing, the alpha level was adjusted using the Bonferroni correction procedure. At School A, paired t-tests demonstrated effects among the participant groups as displayed in Table 11. Significant differences were detected between the means of the actual and importance subscales for both junior-level and senior-level students. Among the faculty, significant differences were detected between the means of the following actual and importance subscales: involvement, teacher support, order
and organization, and innovation. The means between the actual and importance subscales of cohesion and task orientation were not found to significantly differ. Correlation values between the pairs of subscales ranged from .55 to .96.
Table 11.—Paired t-tests Between Perceptions of Actual Subscales and Perceptions of Importance Subscales: School A

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Importance Mean</th>
<th>SD</th>
<th>Actual Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors (n=44)</td>
<td>53.4</td>
<td>7.1</td>
<td>42.8</td>
<td>7.5</td>
<td>9.97</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors (n=36)</td>
<td>51.6</td>
<td>6.0</td>
<td>41.8</td>
<td>7.9</td>
<td>8.70</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty (n=7)</td>
<td>55.8</td>
<td>2.6</td>
<td>48.4</td>
<td>6.8</td>
<td>3.37</td>
<td>.015</td>
</tr>
<tr>
<td>Cohesion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>55.8</td>
<td>6.0</td>
<td>49.5</td>
<td>8.4</td>
<td>5.46</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>54.8</td>
<td>4.3</td>
<td>46.5</td>
<td>8.5</td>
<td>7.04</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>57.2</td>
<td>2.9</td>
<td>54.2</td>
<td>3.9</td>
<td>2.43</td>
<td>.051</td>
</tr>
<tr>
<td>Teacher Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>59.2</td>
<td>3.9</td>
<td>53.7</td>
<td>7.8</td>
<td>5.44</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>58.0</td>
<td>4.0</td>
<td>48.7</td>
<td>8.9</td>
<td>6.61</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>60.0</td>
<td>3.3</td>
<td>57.1</td>
<td>5.4</td>
<td>3.14</td>
<td>.020</td>
</tr>
<tr>
<td>Task Orientation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>56.6</td>
<td>4.1</td>
<td>49.7</td>
<td>6.5</td>
<td>7.46</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>54.1</td>
<td>6.5</td>
<td>45.6</td>
<td>8.4</td>
<td>6.65</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>56.1</td>
<td>2.7</td>
<td>50.4</td>
<td>8.7</td>
<td>2.34</td>
<td>.058</td>
</tr>
<tr>
<td>Order &amp; Organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>54.3</td>
<td>5.5</td>
<td>44.5</td>
<td>8.1</td>
<td>8.00</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>52.1</td>
<td>6.8</td>
<td>42.9</td>
<td>8.4</td>
<td>6.53</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>55.0</td>
<td>5.2</td>
<td>46.0</td>
<td>11.1</td>
<td>3.05</td>
<td>.023</td>
</tr>
<tr>
<td>Innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>46.5</td>
<td>7.1</td>
<td>33.6</td>
<td>7.9</td>
<td>9.85</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>49.1</td>
<td>7.4</td>
<td>31.6</td>
<td>7.9</td>
<td>10.00</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>47.2</td>
<td>5.0</td>
<td>38.0</td>
<td>8.9</td>
<td>4.62</td>
<td>.004</td>
</tr>
</tbody>
</table>

At School B, paired t-test demonstrated effects among the participant groups as displayed in Table 12. Significant differences were detected between the means of the actual and importance subscale for junior-level students, senior-level students, and faculty. Correlation values between the pairs of subscales ranged from .20 to .80.
Table 12.—Paired t-tests Between Perceptions of Actual Subscales and Perceptions of Importance Subscales: School B

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Importance Mean</th>
<th>Importance SD</th>
<th>Actual Mean</th>
<th>Actual SD</th>
<th>t-value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors (n=127)</td>
<td>52.5</td>
<td>7.8</td>
<td>40.5</td>
<td>12.3</td>
<td>-13.99</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors (n=70)</td>
<td>54.4</td>
<td>5.4</td>
<td>46.7</td>
<td>8.2</td>
<td>-8.88</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty (n=31)</td>
<td>52.6</td>
<td>7.2</td>
<td>42.4</td>
<td>8.4</td>
<td>-7.68</td>
<td>.001</td>
</tr>
<tr>
<td>Cohesion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>55.0</td>
<td>7.4</td>
<td>45.8</td>
<td>11.7</td>
<td>-11.02</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>57.5</td>
<td>4.8</td>
<td>51.2</td>
<td>8.2</td>
<td>-6.92</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>53.1</td>
<td>6.5</td>
<td>45.7</td>
<td>8.5</td>
<td>-4.27</td>
<td>.001</td>
</tr>
<tr>
<td>Teacher Support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>57.1</td>
<td>5.7</td>
<td>45.7</td>
<td>12.4</td>
<td>-11.44</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>58.6</td>
<td>4.7</td>
<td>51.9</td>
<td>8.1</td>
<td>-7.76</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>58.7</td>
<td>4.4</td>
<td>53.9</td>
<td>6.5</td>
<td>-6.62</td>
<td>.001</td>
</tr>
<tr>
<td>Task Orientation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>55.5</td>
<td>6.7</td>
<td>45.5</td>
<td>11.5</td>
<td>-10.82</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>56.6</td>
<td>5.1</td>
<td>50.1</td>
<td>7.6</td>
<td>-7.58</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>55.0</td>
<td>5.7</td>
<td>49.5</td>
<td>7.4</td>
<td>-7.82</td>
<td>.001</td>
</tr>
<tr>
<td>Order &amp; Organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>52.7</td>
<td>7.0</td>
<td>43.1</td>
<td>11.5</td>
<td>-9.44</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>53.4</td>
<td>6.7</td>
<td>47.4</td>
<td>7.7</td>
<td>-6.54</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>53.4</td>
<td>5.2</td>
<td>45.1</td>
<td>7.6</td>
<td>-7.32</td>
<td>.001</td>
</tr>
<tr>
<td>Innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>50.4</td>
<td>7.4</td>
<td>34.5</td>
<td>13.5</td>
<td>-14.47</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>50.1</td>
<td>7.0</td>
<td>38.8</td>
<td>9.0</td>
<td>-9.61</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>48.0</td>
<td>7.1</td>
<td>41.6</td>
<td>8.0</td>
<td>-6.39</td>
<td>.001</td>
</tr>
</tbody>
</table>

At School C, paired t-test demonstrated effects among the participant groups as displayed in Table 13. Significant differences were detected between the means of the actual and importance subscales for junior-level students, senior-level students, and faculty. Correlation values between the pairs of subscales ranged from .14 to .88.
Table 13.—Paired t-tests Between Perceptions of Actual Subscales and Perceptions of Importance Subscales: School C

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Importance Mean</th>
<th>SD</th>
<th>Actual Mean</th>
<th>SD</th>
<th>t-value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Involvement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors (n=58)</td>
<td>52.1</td>
<td>6.3</td>
<td>41.2</td>
<td>11.8</td>
<td>-8.28</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors (n=65)</td>
<td>53.1</td>
<td>6.7</td>
<td>47.0</td>
<td>8.3</td>
<td>-7.68</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty (n=18)</td>
<td>53.8</td>
<td>6.0</td>
<td>45.7</td>
<td>8.7</td>
<td>-5.22</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Cohesion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>53.7</td>
<td>6.2</td>
<td>44.3</td>
<td>12.8</td>
<td>-6.54</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>55.9</td>
<td>6.9</td>
<td>52.2</td>
<td>9.5</td>
<td>-4.50</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>51.6</td>
<td>7.2</td>
<td>47.1</td>
<td>9.3</td>
<td>-3.01</td>
<td>.008</td>
</tr>
<tr>
<td><strong>Teacher Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>57.9</td>
<td>5.3</td>
<td>44.6</td>
<td>14.2</td>
<td>-7.82</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>58.5</td>
<td>5.2</td>
<td>52.1</td>
<td>10.6</td>
<td>-5.52</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>57.9</td>
<td>4.2</td>
<td>56.1</td>
<td>3.8</td>
<td>-2.90</td>
<td>.010</td>
</tr>
<tr>
<td><strong>Task Orientation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>52.4</td>
<td>7.0</td>
<td>44.5</td>
<td>9.8</td>
<td>-6.56</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>54.0</td>
<td>6.2</td>
<td>50.9</td>
<td>6.9</td>
<td>-3.76</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>55.7</td>
<td>5.2</td>
<td>52.4</td>
<td>8.1</td>
<td>-3.16</td>
<td>.006</td>
</tr>
<tr>
<td><strong>Order &amp; Organization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>50.5</td>
<td>6.8</td>
<td>43.9</td>
<td>8.4</td>
<td>-5.16</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>51.6</td>
<td>7.5</td>
<td>49.2</td>
<td>8.0</td>
<td>-2.65</td>
<td>.010</td>
</tr>
<tr>
<td>Faculty</td>
<td>55.0</td>
<td>5.6</td>
<td>50.8</td>
<td>7.1</td>
<td>-3.79</td>
<td>.001</td>
</tr>
<tr>
<td><strong>Innovation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juniors</td>
<td>47.7</td>
<td>7.5</td>
<td>31.0</td>
<td>10.7</td>
<td>-10.50</td>
<td>.001</td>
</tr>
<tr>
<td>Seniors</td>
<td>46.0</td>
<td>7.3</td>
<td>34.2</td>
<td>11.2</td>
<td>-9.90</td>
<td>.001</td>
</tr>
<tr>
<td>Faculty</td>
<td>44.8</td>
<td>6.7</td>
<td>37.6</td>
<td>9.6</td>
<td>-6.52</td>
<td>.001</td>
</tr>
</tbody>
</table>

Differences between Student and Faculty Perceptions of Actual and Importance Subscales

A one-way analysis of variance (ANOVA) was initially employed to examine the differences between student and faculty perceptions of the learning environment. This procedure was used to determine the feasibility of collapsing the three participant...
schools into one school population for data analysis. However, statistically significant differences were detected on four of the twelve subscales between the participant schools: importance of task orientation \([F(2,458)=6.18, p=.002]\), actual order and organization \([F(2,457)=4.50, p=.011]\), actual innovation \([F(2,453)=6.26, p=.002]\), and importance of innovation \([F(2,453)=10.2, p\leq .001]\). With the inability to collapse the school populations, a multiple analysis of variance procedure was then conducted.

The multiple analysis of variance (MANOVA) requires four assumptions: 1) random samples, 2) independent observations, 3) normal populations, and 4) equal variances. The first three of these assumptions have been documented on this sample population. Determination of equal population cell variances does not rely on a simple procedure or rule, however. As noted by Hays (1973, p. 483):

Since the analysis of variance is based on the assumption of equal variances, it may seem quite sensible to carry out a test for homogeneous variances on the sample data and then use the result of that test to decide if the analysis of variance is legitimate. Such tests for the homogeneity of several variances exist, and some statistical books advocate these procedures. However, the standard tests for equality of several variances are extremely sensitive to any departure from normality in the populations. The statistician says that these tests with outcomes that depend heavily on incidental assumptions are not "robust". It could easily turn out that one could refrain from carrying out the analysis of variance because the variances were apparently unequal, when a test of equality of means would actually be quite justifiable. Consequently, a test for homogeneity of variance before the analysis of variance has rather limited practical utility and modern opinion holds that the analysis of variance can and should be carried out without a preliminary test of variance.

For this reason, the MANOVA procedure was conducted with subsequent examination of the Box's M test for equality of the group covariance matrices. Significance was detected for both the actual and importance subscales at the \(p=.001\) level. However,
as noted by Norusis (1993, p. B-30), "when sample sizes in the groups are large, the significance probability may be small even if the group covariance matrices are not too dissimilar." On the basis of the above citations, data analysis procedures were continued as planned, keeping in mind this statistical violation.

For each of the subscales, the two-way MANOVA procedure was employed to determine statistically significant differences between student and faculty perceptions of the learning environment among the three participant schools. Status of the participant (student or faculty) was seen as a main effect in three of the actual subscales of the instrument. Faculty perceived a statistically significant greater amount of teacher support, \([F(1,456)=12.15, p \leq .001]\), task orientation, \([F(1,458)=3.97, p=.047]\), and innovation, \([F(1,450)=8.08, p=.005]\) than students (see Figure 1). A main effect for status of the participant (student or faculty) was not evident in any of the importance subscales of the instrument (see Table 14).
as noted by Norusis (1993, p. B-30), "when sample sizes in the groups are large, the significance probability may be small even if the group covariance matrices are not too dissimilar." On the basis of the above citations, data analysis procedures were continued as planned, keeping in mind this statistical violation.

For each of the subscales, the two-way MANOVA procedure was employed to determine statistically significant differences between student and faculty perceptions of the learning environment among the three participant schools. Status of the participant (student or faculty) was seen as a main effect in three of the actual subscales of the instrument. Faculty perceived a statistically significant greater amount of teacher support, \( [F(1,456)=12.15, p \leq .001] \), task orientation, \( [F(1,458)=3.97, p=.047] \), and innovation, \( [F(1,450)=8.08, p=.005] \) than students (see Figure 1). A main effect for status of the participant (student or faculty) was not evident in any of the importance subscales of the instrument (see Table 14).
Figure 1.—A Comparison of Student and Faculty Perceptions of Actual Teacher Support, Task Orientation, and Innovation

- Teacher Support (p=.001)
- Task Orientation (p=.047)
- Innovation (p=.005)
Table 14.—Test of Significant Differences between Student and Faculty Perceptions of Importance Subscales

<table>
<thead>
<tr>
<th>Subscale</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involvement</td>
<td>54.68</td>
<td>1</td>
<td>54.68</td>
<td>1.17</td>
<td>.279</td>
</tr>
<tr>
<td>Cohesion</td>
<td>69.02</td>
<td>1</td>
<td>69.02</td>
<td>1.64</td>
<td>.201</td>
</tr>
<tr>
<td>Teacher Support</td>
<td>19.86</td>
<td>1</td>
<td>19.86</td>
<td>.78</td>
<td>.378</td>
</tr>
<tr>
<td>Task Orientation</td>
<td>20.28</td>
<td>1</td>
<td>20.28</td>
<td>.53</td>
<td>.465</td>
</tr>
<tr>
<td>Order Organization</td>
<td>139.87</td>
<td>1</td>
<td>139.87</td>
<td>3.09</td>
<td>.080</td>
</tr>
<tr>
<td>Innovation</td>
<td>85.86</td>
<td>1</td>
<td>85.86</td>
<td>1.61</td>
<td>.205</td>
</tr>
</tbody>
</table>

School attended (A, B, or C) was also seen as a main effect in two subscales. The students and faculty at School C perceived a statistically significant greater amount of actual order and organization than students and faculty at School A and B, \[F(2,454)=3.70, p=.025\], (see Figure 2).
The students and faculty at School B perceived a statistically significant greater amount of the importance of innovation than students and faculty at School A and C \([F(2,450)=4.12, \ p=.017]\), (see Figure 3).
There were no interaction effects noted between participant status and school attended in the comparison of student and faculty perceptions regarding the actual or important subscales of this instrument.

Differences between Junior Nursing Students and Senior Nursing Students Perceptions of Actual and Importance Subscales

For each of the subscales, a two-way MANOVA procedure was also employed to determine statistically significant differences between junior and senior nursing student perceptions of the actual learning environment among the three participant schools. A main effect for the status of the participant (junior student or senior student) was seen in the multivariate tests of significance \([F(6,378)=2.17, p=.045]\). Results of univariate F-tests on the contributing dependent measures were as follows:
involvement \([F(1,402)=11.42, p \leq .001]\), cohesion \([F(1,400)=9.82, p = .002]\), teacher support \([F(1,401)=5.38, p = .021]\), task orientation \([F(1,402)=4.76, p = .030]\), and order and organization \([F(1,398)=6.72, p = .010]\). Of these same subscales, interaction effects between the participant status and the school attended were also detected by multivariate tests of significance \([F(12,758)=.082, p = .002]\). Results of univariate F-tests of significance were as follows: involvement \([F(2,402)=3.92, p = .021]\), cohesion \([F(2,400)=7.34, p = .001]\), teacher support \([F(2,401)=8.70, p = .001]\), task orientation \([F(2,402)=8.22, p = .001]\), and order and organization \([F(2,398)=4.08, p = .018]\) (see Figures 4, 5, 6, 7, and 8).

Univariate independent t-tests were then employed to determine where the statistically significant differences occurred within each school. Because multiple hypothesis testing was carried out on the subscales, the alpha level was adjusted using the Bonferroni adjustment procedure. Senior students at schools B and C perceived statistically significant higher amounts of involvement \([t(192)=-4.33, p = .001; t(104)=-3.14, p = .002]\), cohesion \([t(188)=-3.88, p = .001; t(106)=-3.96, p = .001]\), teacher support \([t(190)=-3.85, p = .001]; t(108)=-3.37, p = .001]\), task orientation \([t(190)=-3.07, p = .002; t(103)=-4.15, p = .001]\), and order and organization \([t(191)=-3.20, p = .002; t(122)=-3.63, p = .001]\) than junior students at those schools. In contrast, senior students at school A perceived lower amounts of involvement, cohesion, teacher support, task orientation, and order and organization than junior students at that school, but these were not statistically significant differences. The
sixth subscale of the instrument, actual innovation, did not yield main or interaction effects between junior and senior nursing students among the three schools.
Figure 4.—A Comparison of Junior Students and Senior Students Perceptions of Actual Involvement

Figure 5.—A Comparison of Junior Students and Senior Students Perceptions of Actual Cohesion
Figure 6.—A Comparison of Junior Students and Senior Students Perceptions of Actual Teacher Support

Figure 7.—A Comparison of Junior Students and Senior Students Perceptions of Actual Task Orientation
There was no statistically significant main effect for participant status (junior nursing student or senior nursing student) in any of the importance subscales of the instrument (see Table 15).

Table 15.—Test of Significant Differences between Junior Students and Senior Students Perceptions of Importance Subscales

<table>
<thead>
<tr>
<th>Subscale</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involvement</td>
<td>12.34</td>
<td>1</td>
<td>12.34</td>
<td>.26</td>
<td>.608</td>
</tr>
<tr>
<td>Cohesion</td>
<td>118.49</td>
<td>1</td>
<td>118.49</td>
<td>2.87</td>
<td>.091</td>
</tr>
<tr>
<td>Teacher Support</td>
<td>6.94</td>
<td>1</td>
<td>6.94</td>
<td>.26</td>
<td>.608</td>
</tr>
<tr>
<td>Task Orientation</td>
<td>2.10</td>
<td>1</td>
<td>2.10</td>
<td>.05</td>
<td>.816</td>
</tr>
<tr>
<td>Order Organization</td>
<td>1.98</td>
<td>1</td>
<td>1.98</td>
<td>.04</td>
<td>.839</td>
</tr>
<tr>
<td>Innovation</td>
<td>3.62</td>
<td>1</td>
<td>3.62</td>
<td>.07</td>
<td>.796</td>
</tr>
</tbody>
</table>
Although differences in student perceptions between the participant schools was not an intended focus of this investigation, a main effect for the school attended (A, B, or C) was found in the following subscales: actual innovation, importance of order and organization, and importance of innovation. Students at School B perceived a statistically significant greater amount of actual innovation than students at School A and School C, \[F(2,852)=6.91, p \leq .001\] (see Figure 9).

Figure 9.—A Comparison of Junior Students and Senior Students Perceptions of Actual Innovation by Schools

![Bar chart showing perceptions of actual innovation by school](image-url)

Students at School C perceived a statistically significant lower amount of the importance of order and organization than students at School A and School B, \[F(2,392)=3.61, p=.028\] (see Figure 10).
Students at School B perceived a statistically significant greater amount of importance of innovation than students at School A and School C, \([F(2,394)=8.44, p \leq .001]\) (see Figure 11).
For one of the subscales, importance of task orientation, a main effect for the school attended was found \([F(2,399)=8.24, \ p \leq .001]\) and an interaction effect was noted between the school attended and the participant status as a junior or senior student \([F(2,399)=3.15, \ p=.044]\) (see Figure 12). Students at School C perceived task orientation to be less important than students at School A and School B, and that difference was statistically significant. Although not statistically significant, senior students at School B and C perceived task orientation to be more important than junior students at those schools; while at School A, senior students perceived task orientation to be less important than junior students.
Figure 12.—A Comparison of Junior Students and Senior Students Perceptions of the Importance of Task Orientation by Schools

(p = .044)

Analysis of Post-Conference Descriptors by Faculty

Nonparametric procedures were employed for analysis of the non-continuous data provided by faculty at each participant school in the description of selected aspects of clinical post-conference. In order to appraise the undergraduate level taught by respondents at each school, the crosstabulation procedure was employed. Forty-three percent of the faculty at school A, 58% of the faculty at school B, and 53% of the faculty at school C were currently teaching junior level nursing students, [chi square (4) = 8.7, p = .06]. Fifty-seven percent of the faculty at school A, 42% of the faculty at school B, and 47% the faculty at school C were currently teaching senior level nursing students, [chi square (4) = 11.1, p = .02].

The crosstabulation procedure was also employed to estimate the frequency of post conference at each participant school, and significant differences were noted.
Eighty-six percent of the faculty at school A, 92% of the faculty at school B, and 74% of the faculty at school C typically have post-conference following each clinical day [chi-square (4)=5.3, p=.26]. In contrast, 14% of the faculty at school A, 4% of the faculty at school B, and 21% of the faculty at school C typically have post-conference once weekly, [chi-square (4)=13.2, p ≤ .001].

Descriptive statistical procedures were used to ascertain the duration of post-conferences. For the three schools combined, the usual amount of time spent in post-conference is 50.5 minutes; the mode is 60 minutes with a standard deviation of 9.8. The mean least amount of time spent in post-conference is 20.7 minutes; the mode is zero, with a standard deviation of 16.1. The mean greatest amount of time spent in post-conference is 60.1 minutes; the mode is also 60 minutes, with a standard deviation of 19.7. Again combining the three participant schools, the number of students per clinical group is 8.8; the mode is nine, with a standard deviation of 1.6.

Mean scores regarding various post-conference activities were calculated from the three schools combined, with a range of 1.9 to 4.3 (see Table 16). Discussion of clinical experience was the most frequently rated activity, while patient rounds was the least frequently rated activity. Three additional activities written in by individual faculty members included peer evaluations, process recording sessions, and review of mathematics for medication administration. Standard deviation scores among the activities ranged from .75 (guest speakers), to 1.1 (student evaluations).
### Table 16.—Ranking of Post-Conference Activities by Faculty (n=50)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Activity</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discussion of Clinical Experience</td>
<td>4.32</td>
<td>.899</td>
</tr>
<tr>
<td>2</td>
<td>Case Study</td>
<td>3.00</td>
<td>.968</td>
</tr>
<tr>
<td>3</td>
<td>Coverage of Theoretical Content</td>
<td>2.98</td>
<td>1.010</td>
</tr>
<tr>
<td>3</td>
<td>Nursing Ethics</td>
<td>2.98</td>
<td>.901</td>
</tr>
<tr>
<td>5</td>
<td>Student Presentation</td>
<td>2.93</td>
<td>.827</td>
</tr>
<tr>
<td>6</td>
<td>Guest Speakers</td>
<td>2.75</td>
<td>.751</td>
</tr>
<tr>
<td>7</td>
<td>Nursing Research</td>
<td>2.67</td>
<td>.801</td>
</tr>
<tr>
<td>8</td>
<td>Audiovisuals</td>
<td>2.36</td>
<td>.834</td>
</tr>
<tr>
<td>9</td>
<td>Psychomotor Skill Practice</td>
<td>2.34</td>
<td>.830</td>
</tr>
<tr>
<td>10</td>
<td>Role Play</td>
<td>2.18</td>
<td>.858</td>
</tr>
<tr>
<td>11</td>
<td>Quiz or Testing</td>
<td>2.16</td>
<td>.898</td>
</tr>
<tr>
<td>11</td>
<td>Student Evaluations</td>
<td>2.16</td>
<td>1.124</td>
</tr>
<tr>
<td>13</td>
<td>Group Lunch</td>
<td>2.08</td>
<td>.968</td>
</tr>
<tr>
<td>14</td>
<td>Tours of Other Units</td>
<td>2.02</td>
<td>.997</td>
</tr>
<tr>
<td>15</td>
<td>Patient Rounds</td>
<td>1.95</td>
<td>.912</td>
</tr>
</tbody>
</table>
CHAPTER V
DISCUSSION

Psychometric Research Question Findings

The "Clinical Post-Conference Learning Environment Survey" has been constructed to provide nursing educators with an instrument that can describe and differentiate student and faculty perceptions regarding components of clinical post-conference communications and interactions. Three psychometric research questions were asked regarding the instrument that was developed for this study:

1) Do the items for each of the subscales of the "Clinical Post-Conference Learning Environment Survey" have adequate Cronbach alpha coefficients?

2) Do the subscales of the "Clinical Post-Conference Learning Environment Survey" intercorrelate along the dimensions that theoretically frame this instrument, as suggested by Moos?

3) Does the "Clinical Post-Conference Learning Environment Survey" possess temporal stability?

Empirical testing has provided evidence of the psychometric strength of this instrument. Adequate Cronbach alpha coefficients have documented an acceptable level of reliability for each of the six subscales within the tool. Adequate Cronbach alpha coefficients have substantiated an acceptable level of reliability of the three dimensions that support the instrument theoretically. Adequate Pearson r correlation
coefficients for each of the subscales have supported an acceptable level of temporal stability of the instrument. With this population in this setting, the Clinical Post-Conference Learning Environment Survey has psychometric strength comparable to existing instruments that measure the learning environment in other educational settings.

The Clinical Post-Conference Learning Environment Survey has been constructed according to the classification scheme outlined by Moos (1974) regarding the learning environment. The relevancy of the conceptual framework that includes three major dimensions of the environment provided by Moos appears to have been established in the initial use of the instrument with this study population in this setting. As a perceptual instrument measuring both environmental press (the actual scales) and individuals’ needs (the importance scales), the Clinical Post-Conference Learning Environment Survey has been well founded in Murray’s Need-Press Model (1938) that was deemed applicable for this research. Because the instrument assesses the pooled perceptions of members within a group, it has been supported by Stern’s (1958) concept of consensual beta-press that is particularly germane to this setting with this population. Lastly, Kurt Lewin’s (1936) Field Theory, \( b = f(P, E) \), has served as a most appropriate theoretical underpinning for this investigation.

Suggestions for Instrument Improvement

Measures can be taken to improve the "Clinical Post-Conference Learning Environment Survey". Because continued emphasis is placed on the mechanisms by which educational processes impact learning outcomes, there is a definite need by
educators for psychometrically stable instruments that have solid theoretical underpinnings.

In subsequent investigations, one item from each of the subscales can be deleted according to its contribution to the total scale reliability. This procedure will decrease the total items on the instrument from 54 to 48, resulting in less time needed to complete the survey and less fatigue for the respondents. A short-form of the instrument can also be constructed, as has been the case with most existing learning environment instruments. The creation of computer scored answer sheets would eliminate the need for hand transfer of the population responses, as well as potentially decrease the amount of error in data entry.

In further investigations using this instrument, test-retest reliability can be assessed using a random sampling procedure. Additionally, the test-retest population can be surveyed in an manner identical to that of the total population. For this investigation, retest reliability may have been influenced by the fact that a sample of convenience was retested in the conference rather than the group lecture format.

Reliability of this instrument can be further documented in larger sample populations from diverse geographic locations. Currently, analysis of this instrument is based on a limited population from one midwestern state.

Factor analysis of this instrument is also recommended with a large representative population. Uncovering the factors evident in the tool can further support the theoretical basis underlying the instrument.
Content Research Question Findings

Ten content research questions were asked regarding perceptions of the post-conference learning environment by participants of this study. Findings regarding each of these questions will be discussed.

Student and Faculty Perceptions of the Learning Environment

Research question #1 asked, "What are undergraduate baccalaureate nursing student perceptions regarding components of the actual post-conference learning environment?"

The total population of undergraduate baccalaureate nursing students in this study perceived differences among the components of actual post-conference learning environments. Of the six subscales measured in the "Clinical Post-Conference Learning Environment Survey", students perceived the component of innovation to occur least frequently in the learning environment. Involvement was the second to least frequently occurring component perceived in the environment, followed by order and organization and task orientation. Teacher support was perceived as occurring most frequently, with cohesion perceived as occurring second to most frequently.

These findings are not surprising, particularly in light of the responses from the "Faculty Descriptors of Post-Conference" survey that served as an additional instrument in this study. This tool indicated discussion of clinical experience as the primary post-conference activity, with relatively infrequent use of other activities that suggest innovative post-conference practices. Positive perceptions of teacher support
in post-conference may be explained in part by the small ratio of students to faculty in the clinical setting.

Research question #2 asked, "What are undergraduate nursing faculty perceptions regarding components of actual post-conference learning environment?"

The total population of nursing faculty in this study perceived differences among the components of post-conference learning environments. Of the six subscales measured in the "Clinical Post-Conference Learning Environment Survey", faculty perceived the component of innovation to occur least frequently in the learning environment. Involvement was the second to least frequently occurring component perceived in the environment, followed by order and organization and cohesion. Teacher support was perceived as occurring most frequently, with task orientation perceived as occurring second to most frequently. As explained in research question #1, these findings are not surprising.

Research question #3 asked, "What are undergraduate baccalaureate nursing student perceptions regarding the importance of components of post-conference learning environments?"

The total population of undergraduate baccalaureate nursing students in this study perceived differences in the importance of components of post-conference learning environments. Of the six subscales measured in the "Clinical Post-Conference Learning Environment Survey", students perceived innovation as the least important component in the post-conference learning environment. Order and organization was perceived as the second to least important component in the
environment, followed by involvement and task orientation. Teacher support was perceived as the most important component of the environment, with cohesion perceived as second to most important.

It is not surprising that teacher support is rated as most important by students in this educational setting, due to the intensive nature of clinical learning experiences. However, it is difficult to explain or extract from the literature the reasons for the low importance ratings of the innovation component of the learning environment. Perhaps there is an expectation that, for the most part, clinical post-conferences will consist primarily of discussions regarding clinical experiences. Future studies can further explore these importance rating findings.

Research question #4 asked, "What are undergraduate nursing faculty perceptions regarding the importance of components post-conference learning environments?"

The total population of nursing faculty in this study perceived differences in the importance of components of post-conference learning environments. Of the six subscales measured in the "Clinical Post-Conference Learning Environment Survey", faculty perceived innovation as the least important component in the learning environment. Cohesion was perceived as the second to least important component in the environment, followed by involvement and order and organization. Teacher support was perceived as the most important component of the environment, with task orientation perceived as second to most important. Explanations for these importance ratings by faculty are similar to those postulated in research question #3.
The content research question findings regarding student and faculty perceptions of the learning environment can be summarized as follows. The component of innovation is perceived by both students and faculty to occur least frequently in the learning environment. The component of innovation also is perceived by both students and faculty to be the least important of the six components of the learning environment measured in this instrument. In contrast, teacher support appears to be perceived by both students and faculty as occurring most frequently and having the greatest importance of the six components of the learning environment.

Because the "Clinical Post-Conference Learning Environment Survey" is an instrument developed for a unique population in the conference setting, and because the subscales of the instrument are not identical to other learning environment instruments, it is difficult to specifically relate these findings to results from other learning environment studies of younger students in the classroom setting. The practical significance of these research findings is the congruence between rated perceptions of students and faculty in this study population. The least occurring component in the environment is rated as least important for both students and faculty; conversely, the most frequently occurring component in the environment is also rated as most important for both students and faculty.

One point of interest is that students perceive the component of cohesion to be the second most important component of the learning environment, and they rate this component as occurring second to most frequently. Faculty, in contrast, perceive task orientation to be the second most important component of the learning environment,
and they rate this component as occurring second to most frequently. These rating differences between students and faculty are not surprising, as student clinical groups could be expected in this setting to emphasize the importance of group cohesion; while faculty could be expected to emphasize task orientation importance due to their focus on fulfilling the learning objectives of the clinical course. Other learning environment investigations have also documented teachers’ preference for a greater amount of task orientation than students.

**Differences between Actual and Importance Perceptions of the Learning Environment**

Research question #5 asked, "Are there differences between undergraduate baccalaureate nursing students' perceptions of the actual post-conference learning environment and the importance of components of post-conference learning environments?"

In both the junior nursing student groups and senior nursing student groups at each of the three participant schools, statistically significant differences were found between perceptions of components of the actual environment and perceptions of the importance of these components for each of the six subscales measured in the instrument. This finding indicates that components of the learning environment perceived to be important according to students are not actually present during post-conference to the degree desired by the students.

Research question #6 asked, "Are there differences between undergraduate nursing faculty perceptions of the actual post-conference learning environment and the importance of components of post-conference learning environments?"
In the faculty groups at each of the three participant schools, statistically significant differences were found between perceptions of components of the actual environment and perceptions of the importance of these components for each of the six subscales measured in the instrument, with one exception (School A, task orientation and cohesion). This finding indicates that components of the learning environment perceived to be important according to faculty are not actually present during post-conference to the degree desired by the faculty.

To summarize the content research question findings regarding differences between actual and importance perceptions of the learning environment, both students and faculty perceive the six components in this instrument to actually occur less frequently than their correlated ratings of the importance of these components. Because previously published learning environment instruments employ an "ideal" or "preferred" rather than an "importance" scale for comparison against perceptions of actual occurrences in the environment, it is difficult to specifically relate these findings to similar investigations of the learning environment. However, large discrepancies between student and faculty perceptions of the preferred environment and the actual environment have been documented in a number of other learning environment investigations, with findings of preferred scores higher than actual scores.

The practical significance of these findings is that students and faculty can utilize information from this instrument to address the discrepancy between the actual components of the environment and the related importance of these components, and
subsequently implement changes in the environment to meet the learning needs of participants in the learning group. Future investigations can employ the five-step feedback procedure as described by Fraser (1986) to promote desired change in the learning environment.

**Difference between Student and Faculty Perceptions of the Learning Environment**

Research question #7 asked, "Are there differences between undergraduate baccalaureate nursing student and faculty perceptions regarding components of actual learning environments?"

Statistically significant differences were found between nursing students and faculty among the three schools regarding their perceptions of three of the six components of the actual environment measured by this instrument. Faculty perceived greater amounts of teacher support, task orientation, and innovation in the learning environment than students.

It is possible that this finding can be explained by teachers' desire to function optimally, potentially influencing their perceptions of the actual learning environment. Related investigations of educational and other human environments have also revealed a similar pattern of perceptions; persons who have more responsibility in a setting tend to view it in a more positive manner.

Research question #8 asked, "Are there differences between undergraduate baccalaureate nursing student and faculty perceptions regarding the importance of components of post-conference learning environments?"
No statistically significant differences were found between nursing students and faculty regarding their perceptions of the importance of the six components of post-conference learning environments measured in this instrument. Other learning environment investigations have noted greater overall agreement between students and faculty in their perceptions of the preferred rather than actual environment.

To summarize the research questions regarding differences between students and faculty perceptions of the learning environment, faculty perceived a greater amount of teacher support, task orientation, and innovation in the actual post-conference learning environment than students. No differences were found between students and faculty regarding their perceptions of the importance of post-conference learning environment components.

The practical significance of these findings is that for this study population, discrepancy does not exist between students and faculty perceptions regarding the importance of components of the learning environment. Discrepancy is apparent, however, in the perceptions of students and faculty regarding the occurrence of three of the components of the actual learning environment. Of interest is that these components fall among the three broad dimensions of the learning environment as outlined by Moos. This finding indicates that in the perceived actual environment, components of the relationship dimension, goal orientation dimension, and system maintenance and change dimension are perceived differently by students and faculty, calling into question a fundamental difference in their perceptions of the overall actual learning environment.
Different Between Junior Nursing Students and Senior Nursing Students Perceptions of the Learning Environment

Research question #9 asked, "Are there differences between junior and senior level nursing students in their perceptions regarding components of actual post-conference learning environments?"

Statistically significant differences were found between junior nursing students and senior nursing students among the three schools regarding their perceptions of five of the six components of the learning environment measured in this instrument: involvement, cohesion, teacher support, task orientation, and order and organization. Senior students at schools B and C perceived a statistically significant greater occurrence of these components than junior students at those schools. In contrast, for reasons not understood, junior students at school A perceived a greater occurrence of these components than senior students at that school, but that difference was not statistically significant.

Research question #10 asked, "Are there differences between junior and senior level nursing students in their perceptions regarding the perception of importance of components of post-conference learning environments?"

No statistically significant differences were found between junior nursing students and senior nursing students regarding the importance of the six components of post-conference learning environments measured in this instrument.

To summarize the differences between junior and senior nursing students' perceptions of the learning environment, senior students at two of the schools
perceived a greater amount of involvement, cohesion, teacher support, task orientation, and order and organization in the post-conference learning environment than junior students at those schools. In contrast, junior students at the third school perceived a nonsignificant greater amount of involvement, cohesion, teacher support, task orientation, and order and organization than senior students at that school. As with the differences between student and faculty perceptions of the actual environment, the differences between junior and senior students also occurred among all three of the dimensions of the learning environment as outlined by Moos. No significant differences were found between junior nursing students and senior nursing students perceptions regarding the importance of post-conference learning environment components. The above finding cannot be placed in context with other research regarding the learning environment, as perceptions of these unique student groups have not been previously investigated.

The practical significance of these findings is that for this study population, discrepancy does not exist between junior and senior nursing students regarding the importance of components of the learning environment. However, there are differences between junior and senior students regarding their perceptions of the actual learning environment; these differences vary according to the school attended. It is difficult to explain these dissimilarities without an understanding of the related variables impacting the perceptions of the three participant populations. Such related variables include the grouping strategies that the schools employ in creating clinical groups. Senior student post-conference groups who have experienced clinical together
for a longer period of time may be expected to perceive a greater amount of actual involvement and cohesion than junior student groups who have not spent as much time together. Variables that impact differences between the student levels regarding teacher support can also be considered. This may depend in part on the content of the clinical course, the behavioral objectives of the course, and the type of clinical experiences in which the students are engaged. Curricular differences between the schools may mediate effects seen between the levels of students regarding perceptions of task orientation and order and organization during post-conference. The extent of innovative strategies that are employed by faculty during post-conference may be influenced by the curriculum as well as restrictions within the clinical agency in which the group is placed. In this investigation, it is also important to consider size differences between the participant schools that may have impacted both students and faculty perceptions.

Summary of Differences between the Participant Schools

A number of differences in perceptions regarding post-conference learning environments were found to exist between the participants of the three schools involved in this study.

Students and faculty at school B perceived greater importance regarding innovation than students and faculty at schools A and C, and students at that school perceived greater actual amounts of innovation than students at the two other schools. At this school, unlike the other two schools, didactic material from related theory courses is not required to be included in post-conference session. This may allow for
more flexibility in teaching approaches and variety in post-conference activities. Also, unlike the others, School B is closely affiliated with a Medical Center in which many post-conferences are conducted, possibly allowing for greater diversity in post-conference topics and teaching approaches.

Students and faculty at school C perceived greater amounts of actual order and organization than students and faculty at schools A and B, although students at that school place less importance on order and organization than students at the other two schools. It is possible that the students at this school perceive this component as less important because there is actually more order and organization than they desire in the learning environment. Faculty at this school are typically required to cover theoretical content during post-conference, and that may account for the perceptions of greater amounts of organization. Students at School C also place less importance on task orientation than students at School A and School B, perhaps for similar reasons.

One additional finding from the data analysis among the schools is particularly important to consider. For both the actual and importance versions of the instrument, there are no differences among the schools regarding perceptions of the relationship dimension subscales: involvement, cohesion, and teacher support. Group process has historically been the focus of undergraduate clinical post-conference in nursing education. It is not surprising that similarity exists among the schools regarding the perceptions of peer and faculty interaction and support in the learning environments of these settings.
Faculty Descriptors of Post-Conference Findings

Faculty participants of this study were surveyed regarding descriptive aspects of the clinical post-conference. There are differences between the schools in the frequency and duration of post-conference. Similarities exist among the schools regarding the number of students in the clinical groups, with a mean of 8.8. The three most frequently used activities for post-conference among the three schools include discussion of clinical experiences, case studies, and student presentations.

Future empirical study of clinical-post conference activities can examine and correlate the use of particular teaching approaches by faculty during post-conference to perceptions of the learning environment. Additionally, links between post-conference activities, related perceptions of the learning environment, and resultant learning outcomes can also be explored.

General Implications of Findings

The "Clinical Post-Conference Learning Environment Survey" has been constructed for this investigation in order to provide a mechanism for the assessment of undergraduate nursing student and faculty perceptions of clinical post-conference learning environments. As a newly developed instrument that has been shown with a large sample size to possess adequate psychometric strength, it has a number of practical uses in this educational setting.

The "Clinical Post-Conference Learning Environment Survey" can be utilized to build nursing educators’ awareness and understanding of an important component of the undergraduate educational process: the learning environment. Information
regarding perceptions of components of the actual environment and perceptions of the importance of these components can be documented easily and quickly with this tool. Knowledge of the perceptions regarding post-conference learning environments can have an important impact on the learning process in this setting.

In contrast with other approaches to the study of the learning environment, in this investigation the importance form of the instrument was administered concurrently with the actual form of the instrument, allowing respondents to immediately rate and contrast their perceptions of the learning environment. This survey technique has provided useful information carrying a number of implications for both theory and practice. Participants themselves can cognitively assess their perceptions of the congruence or disparity between the components of the actual environment and their ratings of the importance of those components. Researchers have access to this information, potentially representing a more accurate appraisal of the person-environment fit paradigm than is possible with distribution of separate forms of the instrument on different days. Importantly, educators can use the information from the respondents to address discrepancies between the actual and importance ratings, subsequently modifying the learning environment as appropriate.

According to the person-environment fit paradigm, enhanced learning occurs when there is congruence between the actual environment and the components of the environment perceived as important or preferred by the participant. In this study, students and faculty did not differ on their perceptions regarding the importance of the components in the learning environment. This is a notable finding as future research
can systematically attempt to more closely match the actual learning environment to what is mutually perceived by faculty and both levels of undergraduate students as important within the environment. It is conceivable that greater learning gains can be achieved when there is actual-important congruence regarding the learning environment than is possible when there is discrepancy between actual-importance perceptions.

The "Clinical Post-Conference Learning Environment Survey" is solidly grounded on prevailing theory regarding the learning environment. The results that have been obtained in this study with the use of this instrument are in most cases consistent with other empirical investigations based on the same theoretical underpinnings. A number of findings from this investigation are related to and supported by the conceptual framework provided by Moos regarding the learning environment. The conception of the learning environment as multidimensional in nature underlies the instrumentation, research questions, approaches to study design and methods in the study of this interesting and important phenomena.

Most importantly to nursing education today, this study can provide a foundation for subsequent outcome research that links perceptions of the learning environment to cognitive, affective, and behavioral learning gains. The broad dimensions outlined by Moos may in part or collectively contribute to these gains. The relationship dimension components of involvement, cohesion, and teacher support may be found to enhance affective learning in particular, while also augmenting cognitive and behavioral learning. The goal orientation dimension component of task
orientation may be found to contribute specifically to cognitive learning. The system maintenance and change dimension components of order and organization and innovation may be found to forward cognitive, affective, and behavioral learning gains.

**Recommendations for Future Research**

As an exploratory descriptive investigation, this study has explored components of clinical post-conference learning environments as perceived by students and faculty, and has noted discrepant areas between the actual and importance subscales between groups that can be monitored in order to enhance and improve those environments. Differences between student and faculty perceptions of post-conference learning environments have been examined, as have differences between perceptions of junior and senior nursing students. There are many questions stemming from this research that warrant future study. Also, several limitations of this study can be addressed with recommendations for subsequent related investigations.

It is recommended that the approaches to the empirical study of clinical post-conference learning environments outlined in this document be replicated with additional populations. If differences between student and faculty perceptions are found to exist between participant schools, as discovered in this study, an examination of the varying approaches taken by the schools regarding post-conference can suggest explanations for these differences. Future investigations can examine the curricular
differences between the schools that may contribute to differences in student and faculty perceptions of clinical post-conference learning environments.

A number of specific measures can be taken to improve upon this empirical study of the clinical post-conference learning environment. Notably in this research, one school had a smaller student and much smaller faculty population than the other two schools, creating unequal sample sizes. This incongruous data set may have impacted the findings of the study; future attempts can be made to contrast nursing undergraduate programs of approximate sizes. Additionally, while all populations were surveyed during the 1994-1995 academic year, one group (the junior students at School A) were surveyed at the beginning of the second semester while the other groups were surveyed at the end of the first semester. As there were differences noted between the student groups in this study, future attempts can be made to observe all groups during the same time period. Subsequent investigations can also link the particular faculty member to each clinical group, thereby correlating the comparison of student and faculty perceptions at an even more defined level. In future study, inquiry regarding the school of nursing department in which the clinical course is offered can provide additional useful curricular information related to learning environment perceptions. Perhaps differences that impact learning would be found between the learning environments of post-conferences conducted in medical-surgical, maternal-child, mental health, and community clinical courses. Also, in order to provide a more complete portrayal of the clinical post-conference learning
environment, qualitative research techniques can be used concurrently with the quantitative methods employed in this study in subsequent investigations.

There are many complex questions that must be addressed in order to gain a more complete understanding of the phenomena of the learning environment. Although a number of well designed instruments that measure the learning environment have been developed, there is not yet a consensus on the precise determinants of the learning environment. Investigators use and modify existing instruments or create tools de novo to fit the population under study. Although these instruments are grounded theoretically, there is wide variation in chosen subscales, instrument form and length, methods of administration, response formats, and scoring. To date, contextual factors that may impact the learning environment are not taken into consideration with existing instruments, limiting comprehensive understanding of this phenomena.

Investigations of the mechanisms and methods by which learning environments can be changed would provide valuable related information to current studies. Explorations of the most appropriate learning environments for students with different learning styles and learning needs would also enhance practical applications of learning environment investigations.

Rich opportunity exists for empirical investigation regarding undergraduate baccalaureate clinical post-conference. Clinical post-conference is component of undergraduate nursing programs throughout the country, and a substantial portion of time within the curriculum is devoted to it. Nursing educators continue this
educational practice with nearly nonexistent data to support its efficacy to learning processes or outcomes. Inquiry regarding the learning environment perceived by students and faculty within post-conference is one approach to uncovering the usefulness of this teaching strategy. Linking the learning environment to valued cognitive, psychomotor, and affective learning gains can provide a much needed rationale for the continued use of post-conference in schools of nursing.
APPENDIX A

ASSESSMENT OF CONTENT VALIDITY
To: Content experts
From: Marijo Letizia, R.N., C., M.S.
Thank you for agreeing to review these materials related to the post-conference learning environment, and to comment on the content validity of the tool I am developing. For purpose of this research, the learning environment is defined as: "The social and organizational atmosphere that accompanies the interactions and communications between members of a learning group".

There are three dimensions, originally conceptualized by Moos in 1974, that have been used as a foundation for extensive research regarding the learning environment. These dimensions that are briefly described below are: Relationship, Goal Orientation, and System Maintenance. From these dimensions, a variety of indicators have also been conceptualized by a number of researchers. These indicators, then, allow for the generation of an item pool to measure the concept. For my study, I have chosen six indicators that appear to be most applicable with this population in this setting. For each indicator, I have generated 10 questions to be used in the administration of the tool to the developmental sample. Briefly, the dimensions and indicators include:

*Relationship dimension: identifies the nature and intensity of personal relationships within the environment, and the extent to which people support and help each other
  1. involvement
     (extent to which participants are attentive, interested, and active participants in discussions and activities)
  2. cohesion
     (level of affiliation and unity among members of the group)
  3. teacher support
     (extent to which the group members feel that the behaviors of the instructor are supportive of themselves and their learning)

*Goal Orientation dimension: assesses emphasis on completing curricular activities and instructional growth.
  4. task orientation
     (emphasis on subject matter and planned activities that promote learning)

*System Maintenance dimension: identifies the extent to which the environment is orderly, clear in expectations, has variety and novelty
  5. order and organization
     (emphasis on orderly behavior and overall organization of conference activities and discussions)
  6. innovation
I am interested in examining student and faculty perceptions regarding components of the actual environment that exists, as well as their rating of the importance of these components in post-conferences. There are 60 questions using a 7-point Likert scale format. A sample of the format to be used for the survey is also included in this packet. I intend to administer this tool to a sample of 300 undergraduate nursing students and faculty. Following an examination of the items for reliability, I will optimize the scale length and proceed with the pilot study.

What follows on the next pages are each of the indicators with their respective questions. In order to quantify the extent of agreement among the content experts regarding the relevancy of the questions within the indicator categories, the Index of Content Validity as outlined by Waltz and Bausell (1981, p.71) is being employed. You will be asked to rate the relevancy of each question on a 4-point scale: (1) not relevant, (2) somewhat relevant, (3) quite relevant, and (4) very relevant.

Please also respond to the following questions as a guide for your review:

1. Do the six indicators appear to be applicable to the dimensions in which they are placed?

2. Do any of the 10 questions belong with another indicator category rather than the one in which they are placed?

3. Are any items/questions missing from the indicator categories?

4. Are there any items/questions that you find completely inapplicable for this tool?

5. Is the response format appropriate?

6. Can you clearly differentiate the directions between the actual and importance categories?

7. Do you have any other comments or suggestions?

Your feedback is extremely valuable at this phase of the scale development. Thank you so very much for your time and effort in the review of this tool.
**INVolVEMENT**

Students look forward to post-conference.

<table>
<thead>
<tr>
<th>Item</th>
<th>1 - Not Relevant</th>
<th>2 - Somewhat Relevant</th>
<th>3 - Quite Relevant</th>
<th>4 - Very Relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>A few students monopolize post-conference discussions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is a lot of spontaneous discussion during post-conference.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During post-conference discussions, individuals who are speaking receive attention from the group.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-conference activities encourage student participation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students ask questions in post-conference.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students are interested in post-conference discussions and activities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students pay attention during post-conference.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-conference discussions and activities give students something to think about.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students are prepared for post-conference activities and discussions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**COHESION**

Students are interested in other student's opinions during post-conference.

<table>
<thead>
<tr>
<th>Item</th>
<th>1 - Not Relevant</th>
<th>2 - Somewhat Relevant</th>
<th>3 - Quite Relevant</th>
<th>4 - Very Relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members of the group feel a camaraderie amongst themselves.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Students and the instructor are considerate of each other during post-conference.

There is friction between members of this group during post-conference.

Individuals feel accepted as a member of the clinical group during post-conference.

Members of this group are able to have candid discussions during post-conference.

During post-conference, members of this group get to know each other well.

Students feel pressured to compete during post-conference.

There is a closeness between members of this group during post-conference.

Students who experience difficulty receive support from this group during post-conference.

TEACHER SUPPORT

This instructor believes that students can make worthwhile contributions in post-conference.

Favoritism is shown to some students during post-conference.

This instructor encourages student participation during post-conference.

Students watch what they say during post-conference.
This instructor respects student opinions.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant

Students are criticized in post-conference.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant

This instructor emphasizes the positive aspects of the clinical day during post-conference.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant

This instructor authentically praises students.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant

This instructor expresses confidence in students during post-conference.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant

In post-conference, this instructor is interested in problems students are having.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant

**TASK ORIENTATION**

Post-conference time is spent on topics related to clinical.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant

During post-conference, we evaluate the quality of nursing care that we have provided to our clients.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant

Post-conference activities enhance clinical learning.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant

There is a purpose for each post-conference we have.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant

Post-conference gives students an opportunity to clarify information.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant

During post-conference, students learn valuable information.

-1-Not Relevant  -2-Somewhat Relevant  -3-Quite Relevant  -4-Very Relevant
Concerns of students related to clinical are discussed during post-conference.

Post-conferences are gripe sessions.

This group gets sidetracked during discussions in post-conference.

Post-conference activities and discussions are related to theory classes.

ORDER AND ORGANIZATION

Students understand what behaviors are expected of them during post-conference.

Objectives are specified for post-conferences.

The agenda for post-conference is clear, so everyone knows what to do.

Members of this group interrupt each other during post-conference.

Post-conferences are run in an organized manner.

Students are aware of the intended content to be covered in post-conference.

Students interact in a cooperative manner during post-conference.

Post-conference starts late.

Students act appropriately during post-conference.
Students take post-conference discussions seriously.

**INNOVATION**

Different teaching approaches are used in post-conference.

Students participate in innovative activities during post-conference.

Students are encouraged to think creatively in post-conference discussions.

Post-conferences are always held in the same place.

Students are allowed to voice their opinions about the content of post-conference activities.

Post-conference is run the same way each time it is held.

Students determine the pace of post-conference discussions.

Independent thinking is encouraged of students in post-conference.

There is variety in the content of post-conference discussions and activities.

We talk about the same things during each post-conference.
APPENDIX B

CLINICAL POST-CONFERENCE LEARNING ENVIRONMENT SURVEY
The following statements ask you to think about your perceptions of post-conferences during this clinical course.

*** There are no right or wrong responses to this survey ***

For each statement, first think about how post-conferences actually are during this clinical course. Using the scale given in the box above the "ACTUAL" column (on the left side of the page), answer by circling the one number that best describes how post-conferences actually are during this course.

Consider each statement again, and indicate how important you find it to be for this clinical course. Using the scale given in the box above the "IMPORTANCE" column (on the right side of the page), answer by circling the one number that best describes how important you think each statement is for post-conferences during this course.

<table>
<thead>
<tr>
<th>ACTUAL</th>
<th>IMPORTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never Occurs</td>
<td>1 Never Important</td>
</tr>
<tr>
<td>Almost Never Occurs</td>
<td>2 Almost Never Important</td>
</tr>
<tr>
<td>Seldom Occurs</td>
<td>3 Seldom Important</td>
</tr>
<tr>
<td>Sometimes Occurs</td>
<td>4 Sometimes Important</td>
</tr>
<tr>
<td>Often Occurs</td>
<td>5 Often Important</td>
</tr>
<tr>
<td>Almost Always Occurs</td>
<td>6 Almost Always Important</td>
</tr>
<tr>
<td>Always Occurs</td>
<td>7 Always Important</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Never</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Students look forward to post-conference.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Members of this group are interested in each other's opinions during post-conference.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>This instructor believes that students can make worthwhile contributions in post-conference.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Post-conference time is spent on topics related to clinical.</td>
</tr>
<tr>
<td>ACTUAL</td>
<td>IMPORTANCE</td>
</tr>
<tr>
<td>--------</td>
<td>------------</td>
</tr>
<tr>
<td>(1) Never Occurs</td>
<td>(1) Never Important</td>
</tr>
<tr>
<td>(2) Almost Never Occurs</td>
<td>(2) Almost Never Important</td>
</tr>
<tr>
<td>(3) Seldom Occurs</td>
<td>(3) Seldom Important</td>
</tr>
<tr>
<td>(4) Sometimes Occurs</td>
<td>(4) Sometimes Important</td>
</tr>
<tr>
<td>(5) Often Occurs</td>
<td>(5) Often Important</td>
</tr>
<tr>
<td>(6) Almost Always Occurs</td>
<td>(6) Almost Always Important</td>
</tr>
<tr>
<td>(7) Always Occurs</td>
<td>(7) Always Important</td>
</tr>
</tbody>
</table>

### Never
- **Students understand the behaviors that are expected of them during post-conference.**

### Always
- Different methods of teaching are used in post-conference.
- There is equal participation by all students in post-conference.
- Members of this group feel a camaraderie amongst themselves during post-conference.
- This instructor demonstrates equal treatment to all students during post-conference.
- Students evaluate the quality of their nursing care during post-conference.
- Objectives are specified for post-conference.
- Students examine nursing practice in a novel way during post-conference.
- There is a lot of spontaneous discussion during post-conference.
- Members of this group are considerate of each other during post-conference.
- This instructor facilitates post-conference discussions.
<table>
<thead>
<tr>
<th>ACTUAL</th>
<th>IMPORTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>Never</td>
</tr>
<tr>
<td>Always</td>
<td>Always</td>
</tr>
</tbody>
</table>

1 2 3 4 5 6 7 Post-conference activities enhance clinical learning. 1 2 3 4 5 6 7

1 2 3 4 5 6 7 The agenda for post-conference is clear, so students know what to expect. 1 2 3 4 5 6 7

1 2 3 4 5 6 7 Students think creatively during post-conference discussions. 1 2 3 4 5 6 7

1 2 3 4 5 6 7 Members of this group are prepared for post-conference. 1 2 3 4 5 6 7

1 2 3 4 5 6 7 Students are at ease with each other during post-conference. 1 2 3 4 5 6 7

1 2 3 4 5 6 7 This instructor is interested in problems students are having during post-conference. 1 2 3 4 5 6 7

1 2 3 4 5 6 7 There is a purpose for each post-conference. 1 2 3 4 5 6 7

1 2 3 4 5 6 7 Students take post-conference discussions seriously. 1 2 3 4 5 6 7

1 2 3 4 5 6 7 This group meets in different settings for post-conference. 1 2 3 4 5 6 7

1 2 3 4 5 6 7 Members of this group put effort into post-conference discussions and activities. 1 2 3 4 5 6 7
<table>
<thead>
<tr>
<th>ACTUAL</th>
<th>IMPORTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>Always</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Individuals feel accepted as a member of this clinical group during post-conference.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>This instructor respects student opinions during post-conference.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Post-conference gives students an opportunity to clarify information.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Post-conference is conducted in an organized manner.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Students select topics to be discussed or presented during post-conference.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Students ask questions during post-conference.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Members of this group are able to have candid discussions during post-conference.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>This instructor identifies areas of improvement that are needed by students in a constructive manner.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Students learn useful information during post-conference.</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>Students are aware of the intended content to be covered in post-conference.</td>
</tr>
<tr>
<td>ACTUAL</td>
<td>IMPORTANCE</td>
</tr>
<tr>
<td>--------</td>
<td>------------</td>
</tr>
<tr>
<td>Never</td>
<td>Never</td>
</tr>
<tr>
<td>Always</td>
<td>Always</td>
</tr>
<tr>
<td>1  2  3  4  5  6  7</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>There is variety in the topics of post-conference discussions and activities.</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>Members of this group are interested in post-conference activities and discussions.</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>Students share a common bond during post-conference.</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>This instructor emphasizes the positive aspects of clinical experiences during post-conference.</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>Concerns of students related to clinical are discussed during post-conference.</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>Members of this group take turns speaking during post-conference.</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>Other members of the health care team participate in post-conference discussions and activities.</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>Students pay attention during post-conference.</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>Post-conference has a non-competitive atmosphere.</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>This instructor authentically praises students during post-conference.</td>
<td>1  2  3  4  5  6  7</td>
</tr>
<tr>
<td>ACTUAL</td>
<td>IMPORTANCE</td>
</tr>
<tr>
<td>--------</td>
<td>------------</td>
</tr>
<tr>
<td>Never</td>
<td>Never</td>
</tr>
<tr>
<td>Always</td>
<td>Always</td>
</tr>
</tbody>
</table>

1 2 3 4 5 6 7 Post-conference discussions and activities are related to theory classes.

1 2 3 4 5 6 7 Post-conference starts on time.

1 2 3 4 5 6 7 Students engage in unique activities during post-conference.

1 2 3 4 5 6 7 Post-conference discussions and activities give students something to think about.

1 2 3 4 5 6 7 Students who experience difficulty in the clinical setting receive support from this group during post-conference.

1 2 3 4 5 6 7 This instructor expresses confidence in students during post-conference.

1 2 3 4 5 6 7 This group remains focused on the assigned topic of post-conference.

1 2 3 4 5 6 7 Students act appropriately during post-conference.

1 2 3 4 5 6 7 This group does different things on different days in post-conference.
APPENDIX C

FACULTY DESCRIPTORS OF POST-CONFERENCE
Faculty Descriptors of Post-Conference

Please answer the following questions regarding clinical post-conference:

1) Are you currently teaching
   □ Junior Nursing Students
   □ Senior Nursing Students

2) How often do you typically have post-conference?
   □ Following each clinical day
   □ Once weekly
   □ Other

3) How much time do you spend in post-conference?
   Usual amount of time (in minutes)
   Least amount of time (in minutes)
   Most amount of time (in minutes)

4) How many students are currently in your clinical group?

5) Please use the following scale to describe your use of the following activities during clinical post-conference:

   Student presentation 1 2 3 4 5
   Guest speakers 1 2 3 4 5
   Audiovisuals 1 2 3 4 5
   Student evaluations 1 2 3 4 5
   Tours of other units in the agency 1 2 3 4 5
   Case study 1 2 3 4 5
   Quiz or testing 1 2 3 4 5
   Discussion of clinical experience 1 2 3 4 5
   Role play 1 2 3 4 5
   Psychomotor skill practice 1 2 3 4 5
   Coverage of theoretical content 1 2 3 4 5
   Patient rounds 1 2 3 4 5
   Nursing research 1 2 3 4 5
   Nursing ethics 1 2 3 4 5
   Group lunch 1 2 3 4 5
   Other activities (please specify)

   1 2 3 4 5
   1 2 3 4 5
APPENDIX D

CONSENT TO PARTICIPATE
Clinical Post-Conference Learning Environment Survey

I am a doctoral student in the School of Education at Loyola University of Chicago, and request your assistance in completing this survey. I am interested in assessing the learning environment that is perceived by students and faculty during clinical post-conference. For purposes of this study, the learning environment is defined as: "The social and organizational atmosphere that accompanies the interactions and communications between members of a learning group".

I anticipate that an exploration and description of both student and faculty perceptions can lead to an increased awareness of the post-conference learning environment. Feedback provided by survey participants regarding the learning environment can also be used to improve the conditions that are created for positive learning experiences.

You will be asked to read a number of statements that describe components of the post-conference learning environment. You will be asked your opinion regarding aspects of the actual learning environment as it exists in post-conferences during your current clinical course; you will be asked as well to rate the importance of each of these aspects. The questions apply only to your impressions; there are no right or wrong answers to this survey.

Your participation in this study is entirely voluntary; there will be no negative consequences if you choose not to participate. Your responses to this survey will be kept confidential. The results of the survey will be reported as group data, and there will be no way to identify responses of specific individuals who complete this survey. This survey will require approximately 15 minutes to complete. Your effort is very much appreciated as this research cannot be completed without your assistance. If you have any questions about this study or about being a participant in this study, do not hesitate to contact me at the School of Nursing of Loyola University (708-216-9101).

Sincerely,

Investigator: Marijo Letizia R.N., C., M.S. Date: ________________

If you agree to participate, please sign below.

Participant: ____________________ Date: ________________

If you would like to obtain a summary of the research findings, please check here: □
REFERENCES


_Dissertation Abstracts International, 36, 6073B._


Wink, D.M. 1993. Effect of a program to increase the cognitive level of questions asked in clinical postconferences. *Journal of Nursing Education, 32*(8), 357-363.


VITA

The author, Marijo Letizia, was born in Evanston, Illinois, daughter of Frank Spina and Leona Simpson Spina.

In August, 1975, Ms. Letizia entered Loyola University Chicago, receiving the degree of Bachelor of Science in Nursing in May, 1979. She has maintained a position as a staff nurse at the Loyola University Medical Center since that time.

Ms. Letizia completed a Master of Science degree in Nursing from Northern Illinois University in 1992. She has been a faculty member in the department of Medical-Surgical Nursing at the Marcella Niehoff School of Nursing since 1992.

Ms. Letizia is an inducted member of the Sigma Theta Tau and Alpha Sigma Nu honor societies. In 1993, she received certification in Medical-Surgical Nursing from the American Nurses Credentialing Center. She has published a number of manuscripts in refereed nursing journals that focus on topics of clinical and educational practice.
The dissertation submitted by Marijo Letizia has been read and approved by the following committee:

Dr. Carol Harding, Director  
Professor, Counseling Psychology  
Loyola University Chicago

Dr. Martha Ellen Wynne  
Associate Professor, Curriculum, Instruction, and Educational Psychology  
Loyola University Chicago

Dr. Judith A. Jennrich  
Assistant Professor, Nursing  
Loyola University Chicago

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

11/6/95  
Date

[Signature]

Director's Signature