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ABSTRACT

This paper addresses the measurement of classroom environment and proposes an alternative approach to assessing classroom environment that allows subjects greater spontaneity and provides greater descriptive flexibility. A study asked 31 college professors at Midwestern State University of Wichita Falls, Texas, to generate lists of adjectives describing their large freshman and sophomore lecture classes. Interclassroom similarities were measured using adjective overlap. These similarities were subsequently analyzed using cluster analysis to classify classroom climate into three categories: "scholarly," "socially responsive," and "laid back." Out of 31 classroom environment descriptions, 19.4% were classified as "scholarly," 38.7% as "socially responsive" and 22.6% were classified as "laid back." (Six--19.4%--of the 31 fell outside these categories.) It was concluded that free description yields unconstrained data that can be meaningfully analyzed; however, the methodology is not being offered as an indictment of standardized measures of the classroom environment. Other applications of this methodology are suggested. Contains 16 references. (GLR)

# Assessing College Classroom Environment Using Free Description: A Methodological Demonstration

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## Abstract

Classroom environment may be defined as the psychosocial milieu of the classroom. Measurement of classroom environment usually requires rating classes on a series of experimenter-selected scales. In contrast, the present study asked college professors to generate lists of adjectives describing their large freshman and sophomore lecture classes. Interclassroom similarities were measured using adjective overlap. These similarities were subsequently analyzed using cluster analysis to identify categories of classroom climate. It was found that professors grouped three-quarters of their classes into three categories: "scholarly," "socially responsive," and "laid back." It is concluded that free description yields unconstrained data that can be meaningfully analyzed. Other applications of this methodology are suggested.

# Assessing College Classroom Environment Using Free Description: A Methodological Demonstration

Classroom environment may be defined as the perceived psychosocial milieu of a classroom. One can think of classroom environment as the "personality" of the class as a whole. College professors are intuitively familiar with this concept as shown by their everyday comments. Whole classes are described amongst colleagues as "friendly," "eager," "motivated," or "lazy," "sluggish," and "disinterested."

Classroom environment is potentially important both as an independent and dependent variable in educational research and has been studied actively for over two decades (see Fraser, 1986a, 1986b for reviews of this literature). As an independent variable, classroom environment has been linked to a variety of student outcome variables, including student achievement and student satisfaction (e.g., Fraser & Fisher, 1982; Haertel, Walberg, & Haertel, 1981; Haladyna, Shaughnessy, & Redsun, 1982). Schultz (1982) has related classroom environment to teacher satisfaction. As a dependent variable, classroom environment is sensitive to the effects of a variety of factors, including class size, content area, and curriculum (Harty & Hassan, 1983; Lawrence & Welch, 1983; Welch, 1979).

The most commonly used measures of classroom environment--the

Learning Environment Inventory (Anderson & Walberg, 1974), the Classroom Environment Scale (Moos & Trickett, 1974), the Individualized Classroom Environment Questionnaire (Rentoul & Fraser, 1979), and the College and University Classroom Environment Inventory (Fraser, Treagust, & Dennis, 1986)--gather ratings on a set of preselected dimensions that are assumed to be relevant to classroom climate, e.g., personalization, task orientation, involvement, rule clarity, cohesiveness, competitiveness, perspective. As Cadwell and Jenkins (1986) have noted, these instruments were constructed on the basis of: (a) established theories, (b) the existing literature in the area, and/or (c) existing instruments. Intuition also seems to weigh heavily in the development of rating scale instruments of classroom environment.

Granted, preconceived notions about which dimensions of environment should be measured are often checked through interviews with teachers, students, and administrators. Granted too, the data indicate that students and instructors are able to provide reliable ratings on these dimensions which discriminate between classes and react in a sensitive manner to experimental manipulations. However, the fact remains that standardized rating scale measures of classroom environment begin not with the perceptions of those in the classroom, but with someone else's preconceived notions about how classroom environment <u>should</u> be perceived. One wonders if these

instruments give a complete picture of classroom environment. Are researcher-selected dimensions of classroom environment those that would be used spontaneously by teachers or their students?

The research reported here demonstrates an alternative, empirical method of evaluating classroom environment. Rather than beginning with the preconceptions of the researcher, classroom environment was assessed beginning with the comments of classroom teachers.

## Method

### Subjects

Subjects in the study were 31 faculty members at Midwestern State University, a mid-sized (5,500 students) university in Wichita Falls, Texas. These faculty members were selected on the basis of two criteria: (a) they were instructors of record for relatively large (ranging from 42 to 111) freshman or sophomore level lecture-style classes (e.g., freshman history, general psychology, human biology), and (b) collectively, they represented all divisions of the university.

### Procedure

Forty professors were surveyed during the fourteenth week of a 16-week semester. Of these, 31 (77.5%) responded. The results reported here are based on these responses.

Professors were instructed to list six adjectives which

"describe your impressions of (a specified class) at this point in the semester. While listing your adjectives, try to think of the class as a whole. Avoid adjectives that describe only a few individuals or small groups of students."

The analysis of the adjective lists obtained in this manner began with the computation of an adjective overlap measure of similarity between classes as described by Johnson and Collier (1969):

$$s_{12} = n_{12} / (n_1 + n_2 - n_{12})$$

where,

$s_{12}$ = associative overlap similarity between two classes

$n_1$ = the number of adjectives listed for the first class

$n_2$ = the number of adjectives listed for the second class

$n_{12}$ = the number of adjectives shared by the two classes

Accordingly, when two classes presented no identical descriptors, $s_{12} = 0$. When two classes were described in exactly the same manner, $s_{12} = 1$. Only exact adjective matches were used in computing similarities; synonyms did not constitute a match.

The 31 x 31 similarity matrix created in this fashion was next

analyzed using the average linkage method of agglomerative cluster analysis (Norusis, 1985). Cluster analysis examines similarities between stimuli (classes in the context of the present study) in order to identify naturally existing groups or clusters of relatively homogeneous stimuli. Cluster analysis was used in this study to identify discrete types or categories of classroom environment.

## Results

Our choice of cluster solutions was based on: (a) parsimony (all other things being equal, the smaller the number of clusters the better), (b) inclusivity (the more classes included in clusters, the better), and (c) interpretability (all classes grouped into the same cluster should be described by the professors in a similar manner). Using these criteria, most classes fell into three relatively large clusters as described next.

Twelve classes (38.7%) formed the first of three large clusters. Classes forming Cluster 1 were nearly always described as "friendly." Other frequently used descriptors were "open," and "involved." The descriptors associated with this cluster suggested to us the cluster label "socially responsive."

The second large cluster of classes consisted of seven classes (22.6%). Classes in Cluster 2 were nearly always labeled by their professors as "pleasant." Other frequently applied descriptors

included "nice," "unmotivated," and "casual." Classes in this cluster were described in ways that suggested the label "laid back."

Six classes (19.4%) formed the third large cluster. These classes were nearly always described as "attentive." Other adjectives used commonly in describing the classes in this cluster were "committed," "concerned," and "eager," suggesting the cluster label "scholarly."

These three clusters included 25 of 31 classes (80.7%). Six classes (19.4%) fell outside these three categories and failed themselves to form meaningful clusters.

## Conclusions

Common practice in measuring classroom environment has subjects rate their classes along several experimenter-selected dimensions. Although standardized measures of classroom environment have been shown to be psychometrically sound, they necessarily constrain subjects' descriptions. The purpose of the present study was to demonstrate an alternative approach to assessing classroom environment that allows subjects greater spontaneity and provides greater descriptive flexibility.

Adjective lists were generated by college professors to describe their large lecture classes. An index of adjective overlap measured similarity between classrooms and these similarities were cluster analyzed to identify three interpretable clusters or types

of classroom environments: socially responsive, laid-back, and scholarly.

The methodology described here is applicable beyond the domain of classroom environment. In any situation that involves identifying relatively homogeneous groups of stimuli, freely generated adjective lists may provide a useful starting point. Consider these possibilities. How many styles of teaching are there and which are most associated with successful student achievement? In how many distinctively different ways do teachers discipline students and how do these approaches relate to students' attitudes? What kinds of administrative styles are practiced by university academic vice presidents and how do they relate to faculty morale? How many distinctively different kinds of faculty office environments are there and how do they influence students' perceptions of the quality of academic advising?

This study is not presented as the definitive study of college classroom environment. We examined only a small number of classrooms at a single university and focused exclusively on relatively large, freshman or sophomore lecture classes. The three clusters of classroom environments identified here certainly do not exhaust all of the possibilities. Nor do we claim to have evaluated fully the psychometric qualities of this approach. We have no data bearing on the reliability of professors' adjective lists and we

have not directly compared our method against the traditional rating scale approach. Our results are presented, then, not to indict standardized measures of classroom environment, but to demonstrate a potentially useful alternative assessment methodology.

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