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VALIDATION OF A CLASSROOM CLIMATE INVENTORY

FOR USE AT THE EARLY ELEMENTARY LEVEL

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## Abstract

A classroom climate measure that can be used at the early elementary level was validated on a sample of 129 children in five primary-grade classes. This measure consists of five scales assessing aspects of the classroom social climate such as Satisfaction and Cohesiveness. Item analysis was used to identify items whose removal would improve scale internal consistency and discriminant validity. Scales modified in this way were then administered to a cross-validation sample of 189 primary-grade children. Data relating to scale concurrent validity were also gathered. These validating procedures indicate that the instrument is a potentially useful device for assessing students' perceptions of the classroom social environment.

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There is increasing interest in the role that context plays in the teaching-learning process (Mishler, 1979; Brophy, 1979); this is true despite the fact that context is extremely difficult to define because it includes a host of variables, ranging from those operating at the community level and beyond to quite specific physical and social-psychological aspects of the classroom environment. Nevertheless, significant recent efforts have been made to examine context effects in education. Moos (1979), for example, has developed scales to assess key dimensions of classroom social environment. Scale scores on Moos's measure relate to variables such as classroom subject matter (Hearn & Moos, 1978) and class absenteeism (Moos & Moos, 1978). A considerable amount of research examining the influence of classroom climate on student learning has also been done by Walberg and his colleagues. Anderson and Walberg (1973) developed an instrument to assess perceived social climate that can be used with students at the junior and senior high levels. Like Moos's measure, scores on this instrument relate to various cognitive and noncognitive learning outcomes (Anderson & Walberg, 1974).

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To broaden the scope of this research, Fraser (1979) recently modified Anderson and Walberg's instrument, the Learning Environment Inventory, for use with children at the upper elementary level. Because establishment of positive classroom social climate is of central concern to elementary school teachers (Prawat, 1980), measures such as the one developed by Fraser should prove useful for teachers as well as researchers. This paper attempts to further contribute to the instrument development effort described above by validating a classroom climate measure for use at the early elementary level (i.e., first, second and third grade). Teachers at this level should be especially interested in assessing classroom social environment given the emphasis they place on socialization training (Blumenfield, Hamilton, Wessels, & Falkner, 1979).

The instrument validated in the present study is a reworked version of the Learning Environment Inventory, developed by Walberg and Anderson (1973), and thought to be appropriate for young children. Their measure, the My Class Inventory, consists of five nine-item scales which employ a yes-no format. The five scale dimensions are Satisfaction, Friction, Competitiveness, Difficulty, and Cohesiveness. Individual scale reliabilities range from .54 to .77.

An effort was made to validate this instrument for two reasons: First, it can be easily and quickly administered to children in intact classrooms; second, it measures dimensions of the classroom environment which are directly relevant to teacher concerns in the affective domain (Prawat, 1980).

The following test validation procedure was used. First, the My Class Inventory was validated on a sample of children in five primary classes, each from a different school. Item analysis was used to identify items whose removal would enhance scale internal consistency and discriminant validity, and modified scales were cross-validated on a second sample of children in

eleven classes. In addition, sociometric data were gathered in the original five classrooms in order to examine the concurrent validity of the My Class Inventory.

### Method

#### Subjects

The original instrument was administered to a developmental sample of 129 children in five primary classrooms located in five different schools in a large, racially mixed, urban school district. Of the five classrooms, one was a combination first- and second-grade class, two were second-grade classes, and two were third-grade classes. The revised battery was administered to a cross-validation sample consisting of 189 children in 11 primary classrooms, all drawn from a single school in the same district.

#### Procedure

Two instruments were administered to a developmental sample of 129 children: The first was Anderson and Walberg's 45-item My Class Inventory, the second was a sociometric measure developed by Singleton and Asher (1977). In order to optimize results, instrument instructions and items were read aloud to subjects in randomly selected groups of five by experimenters; typically, an empty room near the classroom was used for this purpose. Data from the sociometric measure were used to examine the concurrent validity of the My Class Inventory.

A program developed by Hunter and Cohen (1969) was used to identify items on the My Class Inventory whose removal would enhance scale internal consistency and discriminant validity. Items were removed based on two

criteria: (1) an item was removed if it had a low or negative correlation with the total score on the scale to which it had been a priori assigned and (2) an item was removed if its correlation with other scales was higher than its correlation with the assigned scale. The first criterion is aimed at improving scale internal consistency, the second, at improving scale discriminant validity (i.e., the extent to which scale items measure a unique dimension, not measured by other scales in the instrument).

Based on this procedure, a revised instrument was created. This was then administered to the cross-validation sample described above. The test procedure differed for this sample in that children responded to instruments in intact classrooms. Instrument instructions and items were read aloud to children by their teachers.

### Instruments

The My Class Inventory measures children's perceptions of the classroom social climate (Anderson & Walberg, 1973). It has received limited use thus far (Morrison, 1979). Prior to its use in the present validation study, slight changes were made in item wording in order to increase item comprehensibility. Specifically, the term "pupils" was deleted from items in favor of the more understandable term "children."

A sociometric instrument developed by Singleton and Asher (1977) was also administered to subjects in the validation sample. The instrument was administered to groups of five children at a time. In the sociometric measure, children rate each of their classmates on a five-point scale in terms of how much they like to play with each classmate and how much they like to work with each classmate. Five faces ranging from smiles to frowns are used to illustrate what the points on the rating scale mean.

## Results and Discussion

Original scales on the My Class Inventory were modified following the procedure described above. As a result, 19 items were deleted from the instrument. The modified battery thus consisted of 26 items distributed over five scales. Data relating to the internal consistency and discriminant validity of each of the modified scales are presented in Table 1, based on the developmental and cross-validation samples.

Alpha reliability coefficients were calculated as indices of internal consistency, while scale intercorrelations were calculated as indices of discriminant validity. Table 1 presents sample items from each scale; the number of items in each scale is indicated as well.

Table 1  
Internal Consistency and Discriminant Validity Data for Each Modified Scale  
Administered to the Developmental and Cross-Validation Samples

Scale Sample Item	Number of items	Developmental Sample		Cross-Validation Sample	
		Reliability	Mean coefficient of correlation with other scales	Reliability	Mean Coefficient of correlation with other scales
Satisfaction Most children say the class is fun.	5	.77	.19	.77	.12
Friction Many children in our class like to fight.	6	.73	.34	.61	.20
Competitiveness Most children want their work to be better than their friend's work.	7	.69	.24	.57	.19
Difficulty In our class the work is hard to do.	4	.58	.11	.52	.10
Cohesiveness All of the children in my class like one another.	4	.61	.27	.52	.23



Looking first at the reliability and validity coefficients obtained from the original administration of the instrument (i.e., to the developmental sample), it appears that each of the modified scales is reliable and sufficiently distinct from the others; thus reliability coefficients for the validation sample ranged from .77 to .58 with a mean of .68. This is quite high for scales with as few items as these contain. The values of the mean coefficient of correlation between a scale and the four other scales ranged from .11 to .34, with a mean of .23.

As indicated, the modified My Class Inventory battery was administered to a sample for cross-validation. Internal consistency and discriminant validity data from the cross-validation sample are presented in Table 1. The reliability and validity coefficients compared favorably with those obtained from the developmental sample. Thus, alpha coefficients ranged from .77 to .52, with a mean of .60. The mean correlation of a scale with other scales ranged between .10 and .23, with a mean of .17.

Evidence relating to the construct validity of the modified My Class Inventory battery is presented in Table 2. This table shows the pattern of scale intercorrelations, using class mean My Class Inventory scores. Class means are the appropriate units of analysis when assessing student perceptions of the classroom environment. Although the developmental sample of five classrooms is quite small, the pattern of scale intercorrelations conforms to expectations. Thus, Satisfaction was positively related to Cohesiveness and negatively related to Friction. Friction, on the other hand, was positively related to competitiveness and negatively related to Cohesiveness. The one exception to the expected pattern is the Difficulty scale. Because of the kinds of item included on this scale (i.e., "Schoolwork is hard to do." "Only the smart children can do their work."), it was considered to be essentially a negative scale; this was not born out by the pattern of scale intercorrelations.

Table 2  
Intercorrelations Among Scales on the My Class Inventory  
and Sex-Bias Scores on the Sociometric Measure

Variable	1	2	3	4	5	6
<b>My Class Inventory Scales</b>						
1. Satisfaction						
2. Friction	-.73*					
3. Competitiveness	-.54	.83**				
4. Difficulty	.56	-.23	.20			
5. Cohesiveness	.97**	-.78**	.61	.61		
<b>Sociometric Sex-Bias Scores</b>						
6. Workmate Preference	-.34	.65*	.23	-.61	-.45	
7. Playmate Preference	-.51	.84**	.48	-.51	-.61	.96**

\* Marginally significant,  $p < .06$  to  $< .12$

\*\*  $p < .05$

Evidence relating to instrument concurrent validity is also to be found in Table 2. Scores from the sociometric rating instrument administered to the developmental sample were obtained in the following way: The average play and work rating given by each child to his or her male and female classmates was computed; the difference between these scores was found, and that was summed across children, and divided by the number of raters within the class to yield a classroom sex bias index. Thus, the higher this number, the greater the amount of sex-bias evident at the classroom level.

One might expect sex-bias scores to be positively related to Friction (i.e., "Some children don't like other children."); this is basically what was found. As Table 2 reveals, sex bias in workmate preference correlated significantly with Friction scale scores; sex bias in playmate preference also correlated with Friction at the classroom level, although to a much lesser degree. It is also noteworthy that the two sex bias indices correlated negatively though nonsignificantly, with the Satisfaction and Cohesiveness

scales, and positively with the Competitiveness scale. In examining this pattern of correlations, one must keep in mind the small sample size. It does seem fair to say that these data provide further support for the validity of the revised form of the My Class Inventory.

Finally, a series of analyses of variance were done to determine the extent to which scale scores significantly discriminate between classrooms in the developmental sample. In fact, a substantial amount of scale variance is accounted for by differences between classrooms, ranging from 12% on the Difficulty scale to 38% on the Friction scale. In all the analyses, the classroom effect was highly significant ( $p < .004$ ).

To conclude, the classroom climate scale validated in the present study is potentially useful to teachers and researchers in several ways. First, it could be used by teachers as an assessment device to monitor changes in students' perceptions of the classroom social environment. Second, it could serve as a useful criterion variable for researchers or evaluators interested in examining the effects on students of various instructional manipulations. Finally, it may prove useful as an evaluative tool in assessing the impact on students of a broader set of factors, such as those associated with desegregation.

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