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Collective Responsibility for Student Learning: A Rating Scale Analysis

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### Abstract

The National Board for Professional Teaching Standards (NBPTS) is one of many organizations resolved to improving education in the U.S. by certifying teachers committed to students and learning. Accordingly, the NBPTS is interested in measuring that commitment as evidenced by the degree of collective responsibility held by member teachers. This study results from that interest. First, the study creates a survey instrument of four-option, Likert-scale items to measure collective responsibility for student learning from a teacher-level perspective. Second, it performs a rating-scale analysis using instrument psychometric properties from data collected in seven districts throughout Michigan and recommends changes for instrument improvement.

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## Purpose/Content

The purpose of this study is to develop an instrument for the National Board for Professional Teaching Standards (NBPTS) to measure collective responsibility from the teacher level in public schools in the United States. Here *collective responsibility* is defined as “the extent of a shared commitment among the faculty to improve the school so that all students learn” (Lee & Smith, 1996, p. 114). This is a unique approach in that other attempts to measure collective responsibility have been from school rather than teacher level. With this instrument, the NBPTS can compare the level of collective responsibility held by nationally board certified teachers to those who are not. The organization is particularly interested in this because previous research has shown that in schools where there is a higher level of collective responsibility, there is also a higher level of student achievement (Lee & Smith, 1996). Thus, the NBPTS hopes to find that nationally board certified teachers show higher levels of collective responsibility. This would provide one more piece of evidence that the National Board for Professional Teaching Standards is, in fact, making strides toward reaching its goal of improving student learning in American schools through teachers who are committed to students and their learning (<http://www.nbpts.org/>).

The National Board for Professional Teaching Standards (NBPTS) was founded in 1987 as an independent, nonprofit, nonpartisan, and non-governmental organization. Its mission is threefold:

- to establish and maintain high and rigorous standards for what accomplished teachers should know and be able to do,
- to develop and operate a national, voluntary system to assess and certify teachers who meet those standards, and
- to advance related education reforms for the purpose of improving student learning in American schools (<http://www.nbpts.org/>)

The impetus for this specific investigation arises from the third proposition of the policy document of the NBPTS found in “What Teachers Should Know and Be Able to Do” (<http://www.nbpts.org/about/coreprops.cfm#prop3>), which states “Teachers are committed to students and their learning.” The objective at hand for the NBPTS is to determine to what degree that commitment currently exists.

The emphasis on the investigation at the teacher level is based on the foundational belief of the NBPTS that the single most important action this country can take to improve schools and student learning is to strengthen teaching (<http://www.nbpts.org/about/index.cfm>). The outcomes from this investigation will increase awareness of national board certification and demonstrate its benefits for both teachers and students, possibly resulting in an increase in the number of teachers seeking national board certification. This would, in turn, presumably improve student learning for all, which was the original objective for the establishment of the National Board for Professional Teaching Standards (Baratz-Snowden, 1992).

## Theoretical Framework

### *Definition of the Construct*

The latent trait that the instrument under development is designed to measure can be broadly defined as “the degree to which all members of a faculty are committed to a shared responsibility for school improvement so that all students learn” (Lee & Smith, 1996, p. 114). Within this construct, the emphasis will be on the teacher’s willingness, interest, and care for how and what all of his or her students learn. Foremost in this investigation will be collective responsibility with regard to the individual commitment to the collective.

*Internal Model*

Unlike previous investigations that have examined collective responsibility at the school level, this one will examine it at the individual teacher level. Within this framework, the teacher will serve in two capacities: reporter and identifier. Additionally, each of these categories will be divided into two separate domains: school and classroom. Thus, the questions regarding collective responsibility will be partitioned into the four categories shown in *Figure 1*.

*Figure 1. Internal Model*

		DOMAIN	
		CLASSROOM	SCHOOL
Role of the Teacher	REPORTER OF OTHERS	I Awareness of Classroom of Others	II Collective Responsibility of Others
	IDENTIFIER OF SELF	IV Self Responsibility for Student Learning Self	III Responsibility to the Collective

Survey questions from quadrant I ask the teacher to act as a *reporter*, with regard to his knowledge of the actions and classroom conditions of other teachers. These questions begin with, “I know...” Questions taken from quadrant II again ask the teacher to act as a *reporter*, but this time presenting the degree to which he observes or perceives responses and actions involving others throughout the school. Questions from this section typically begin with the stem, “In this school...” This includes generalized impressions of the climate within the school as well as conditions affecting all faculty. Quadrant III questions ask the teacher to take on the second role as *self identifier* with regard the larger context of the total school and his commitment to the collective. Although the questions include “I” statements as they did for quadrant II, they now

encompass a larger scope and refer to individual actions that are influenced by or potentially affect the entire school. In the final quadrant IV, the questions ask the teacher to be a *self identifier*. Thus, these questions also involve “I” statements. Here the teacher is asked to give an accurate account of his/her own actions and attitudes within his/her classroom.

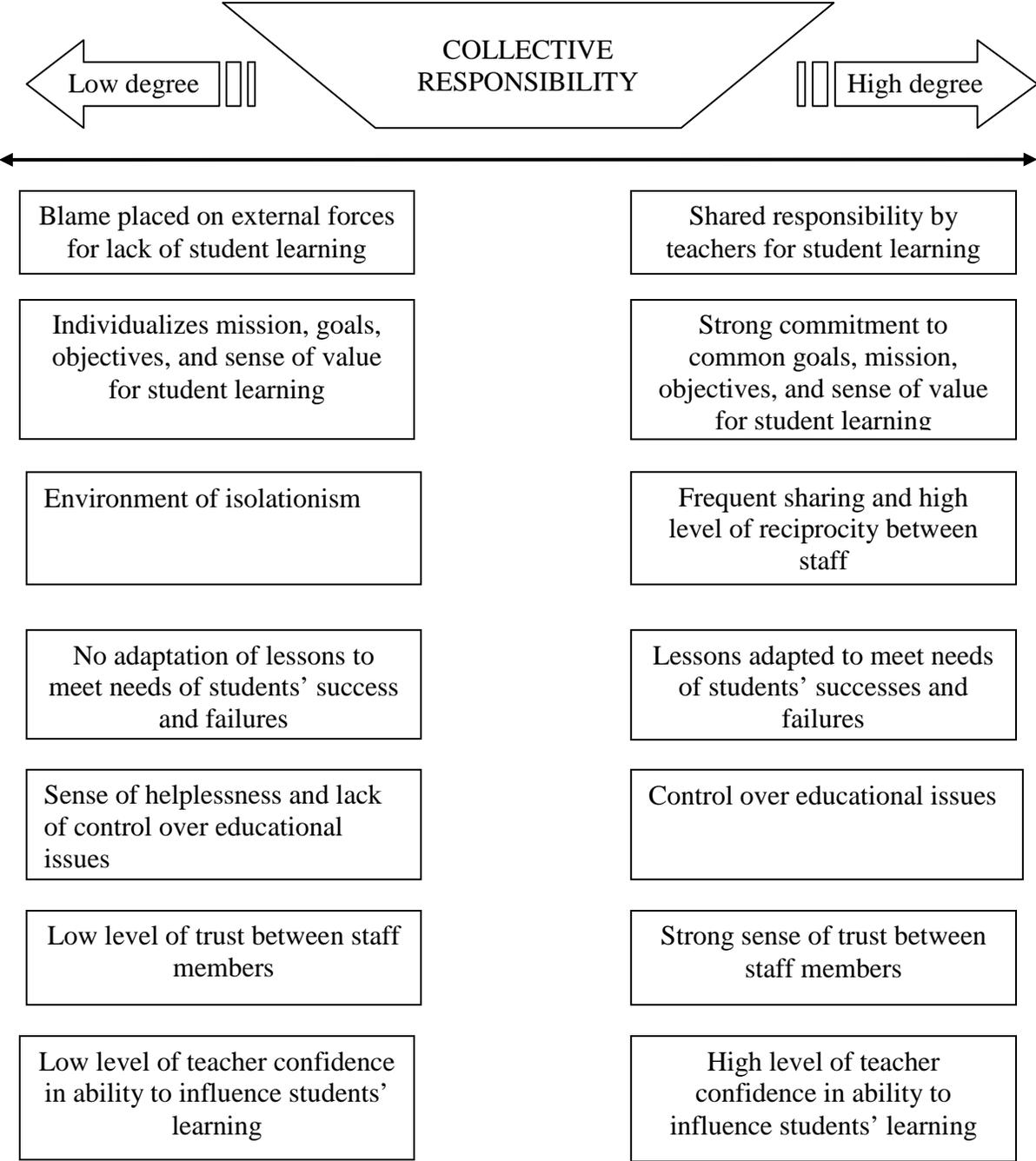
### *Hierarchical Organization of the Construct*

The construct of collective responsibility can be represented with a continuum as shown in *Figure 2*. This diagram graphically depicts that lesser amounts of collective responsibility are demonstrated by characteristics on the left and greater amounts on the right. The seven identifying characteristics are:

1. Shared responsibility by teachers for student learning
2. Lesson adaptation to meet needs of students’ successes and failures
3. Confidence in ability to influence students’ learning
4. Commitment to common goals, mission, objectives, and sense of value for student learning
5. Frequent sharing and high levels of reciprocity between staff
6. Sense of trust between staff members.
7. Control over educational issues

These seven selected are based on results from investigations involving school-level factors and student achievement. The first, shared responsibility, was investigated extensively by researchers Lee and Smith (1996), who found teachers with minimal collective responsibility tend to blame external factors beyond their control while those with high collective responsibility all share in the responsibility for student achievement. Additionally, Lee found that teachers with high levels of collective responsibility also adapted their lessons to meet the needs of students’ successes and failures (#2). It was also Lee, who in research conducted with Derrick and Smith (1966), found teachers with high degrees of collective responsibility have confidence in their ability

Figure 2. Developmental Model



to influence students' learning while those without do not (#3). This was also supported by the findings of Tracz and Gibson (1986). The importance of all of the next three items (4-commitment to common goals, 5-staff reciprocity, and 6-sense of trust), is brought into account in the research findings of Frank (1998). The importance of control (#7) is pointed out in similar investigations completed by DuFour (1997, 2002).

Based on this previous research, I hypothesized that the presence of each of these factors to a lesser degree would be easier for teachers to achieve and would be more prevalent in situations where there was less shared responsibility. Conversely, the presence of these factors to a greater degree would be more difficult to endorse and would be more prevalent in situations in which a greater degree of shared responsibility existed. If this hypothesized structure is reflected in the pilot data, then evidence for structural validity will have been provided. Furthermore, if I compare the scores of two groups that would be expected to differ and the expected differences are realized, this will provide evidence of external validity.

### *External Model*

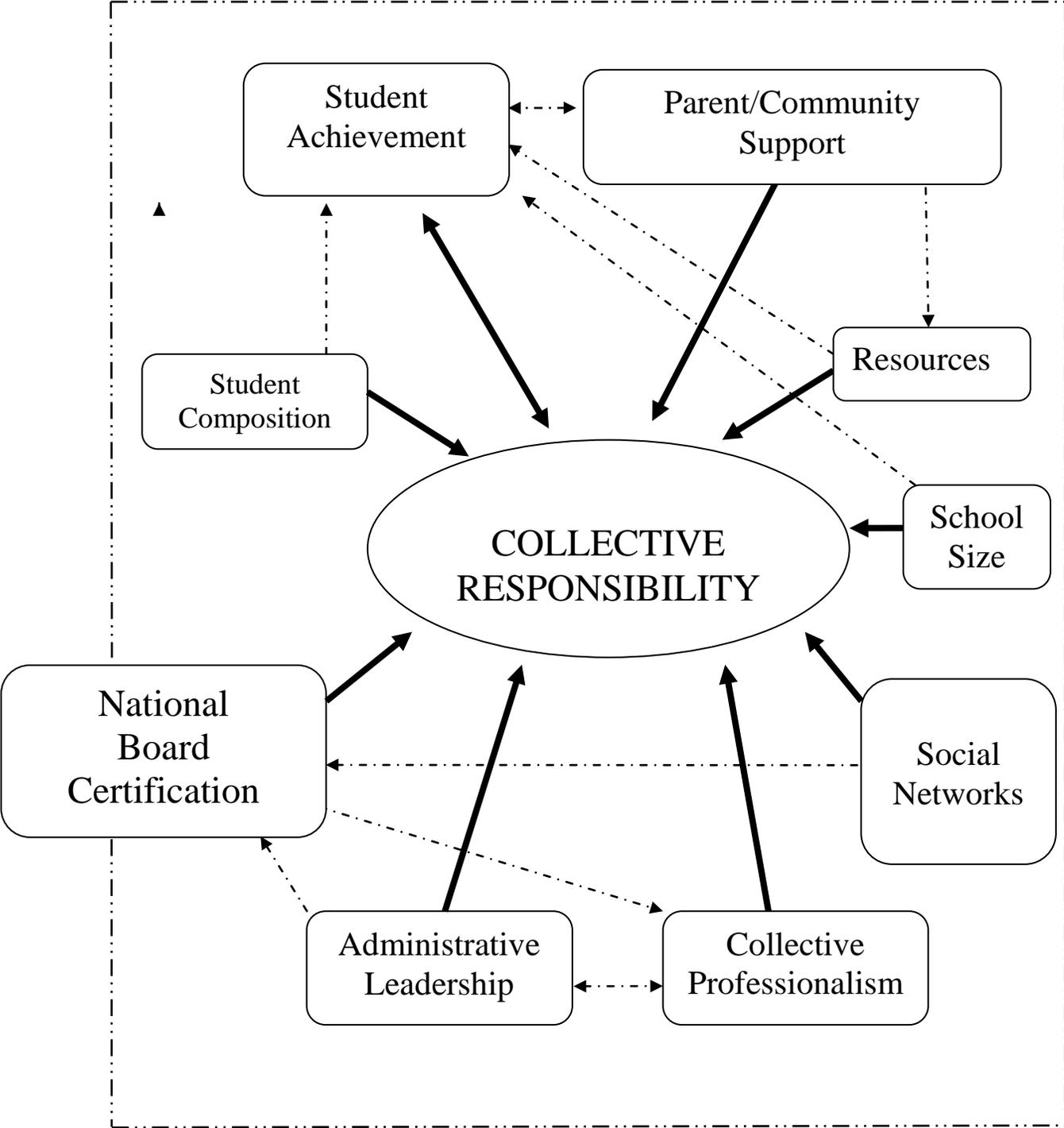
In this exploration of collective responsibility, a serious concern surfaces in that this is not an entity that may be investigated in isolation. Thus, both its antecedents and consequences come into play. As a result, the investigation will, by necessity, involve other factors of influence on collective responsibility. From the literature, eight of the most prominently have been selected for inclusion. The first is the effect of *social networks* on such "soft" factors of productivity as trust, cooperation, helping behavior, and norms of reciprocity that, in turn, affect levels of collective responsibility. The second is the manner in which material *resources* are mediated by processes that resolve issues of instructional coordination, incentive mobilization,

and management of learning environments. The third is the level of *support* teachers receive.

This includes that from parents, community, and administrative leadership. Fourth is the critical factor of *student achievement*. Without question, when students are successful, everyone is willing to share in the responsibility for that success. However, when students fail, few are eager to take responsibility (Lee, Dedrick and Smith, 1991). Also included in the factors impacting the level of teacher collective responsibility are those of school *demographic characteristics*, such as size, SES, and ethnicity. The seventh factor is *collective professionalism* in local work settings. This points to teacher leadership involvement in mid-level policies regarding school functioning that are broader than the classroom yet related directly to instructional improvement. The last factor of influence, which may possibly be one of the most powerful, is that of administrative leadership. A diagram of this external model is shown in *Figure 3*.

*Affiliation with other members of the collective (social networks)*. It has been long established that social networks provide a metaphor for understanding complex social relationships and for illustrating the importance of trust among units in a system (Scherer, 1981). Thus, social networks within a school are important to this investigation in reaching understanding. Traditionally, as a function of the structure of American schools, throughout the majority of the school day, teachers are isolated from their peers. However, research found that in situations where restructuring took place to allow teachers opportunities for professional interaction, student academic achievement improved. For example, using the data from the National Education Longitudinal Study of 1988 (NELS:88), Lee and Smith (1994) found students in these restructured schools gained significantly more in mathematics than those in non- restructured, traditional schools. These positive results certainly build a strong case

Figure 3. External Model of the Construct.



for the influence of daily personal interaction between teachers, staff, and administrators.

There is also additional research that similarly supports the importance of a strong social network within a school. Charles Bidwell demonstrated through his work that school actors inform one another, persuade one another, and exert social pressure through their relationships (2000, 2001). In fact, Aston and Hyle (1997) found that social networks tended to impact teachers' beliefs even more than school experiences. Among those may conceivably be that of collective responsibility for student learning. In support of the importance of social networks, Frank (1998) found that teachers who shared information or exchanged opinions were more able to influence one another if they were members of a common professional circle than if they operated in relatively segregated regions of a school. Thus, we can conclude that if an actor has strong ties with others who have a strong commitment to collective responsibility, it is highly likely he will also develop a strong commitment to collective responsibility, or, minimally, be moved in that direction. This supports the proposition that the social network within a school is an important element in the factors that influence collective responsibility.

*Equal allocation of resources.* In many schools in the United States, teachers perceive that the resources available to them are scarce (OSSC, 1995). Consequently, there is a tendency for a teacher to “protect one’s territory.” That is, the teacher will only give up a resource if something of equal or greater value is received in return. In situations where resources are truly scarce, not just perceived, if a teacher continues to give out resources from a finite supply without receiving something of minimally equal value in return, it would only be a matter of time until all of his resources are depleted. Thus, in situations where there are large discrepancies in the amount of resources being held by or available to teachers, it is much more difficult for the

atmosphere of “sharing” needed for collective responsibility to exist. This position is supported in the literature where Frank (2002) found that actors who identify with others in a social system as a collective were more likely to allocate resources uniformly throughout the system. Specifically, a teacher can not feel that everyone on staff is taking equal responsibility for student learning when they see glaring examples of inequality around them. Additionally, Bryk and Thum (1989) found that the more a school supports the professional community, the more teachers spend time on teaching activities. Thus, in situations where teachers feel they have the resources they need and can receive assistance, they are more likely to exert greater effort in improving student achievement. It follows that with additional time devoted to teaching activities, instruction will improve, resulting in the higher student achievement that has been found to be coupled with greater degrees of collective responsibility (Lee, 1996).

*Degree of communication with parents/community.* A strong connection has been found between parents’ influence and student scholastic achievement (Bandura, 1996; Bowen & Bowen, 1998). Bryk and Driscoll (1988) found that a positive relationship between parents and school staff provides important support for school aims. In order to achieve greater academic success, the findings of Henderson, Jones, and Self (1998) stressed the importance of designing educational goals and programs that reflect linkages between homes, schools, and communities. Their work supported the long-held belief that parents are extremely important to the educational process. Hence, another factor to be considered in the interaction of collective responsibility and student achievement is that of contact and communication with the parents and community. The degree of communication an individual teacher has with the parents of his students and the community where he teaches, may be thought of as an extension of the social network of the

school. In this extended network, the interest in student learning provides a strong tie between the teachers and parents or other community members. Thus, in the difficult task of educating students, the degree to which the parents and community support the efforts of the educators may have a strong influence on the degree to which the teachers assume a shared responsibility for the outcome.

*Level of student achievement.* As referred to earlier, in research completed in 1991, Lee, Dedrick and Smith demonstrated that a teacher is more likely to have a higher level of collective responsibility when students are performing at or above grade level. In schools where students have consistently scored well on standardized tests and have received recognition through the media for their achievements, teachers are more willing to take responsibility. For example, in 2000, Lee and Loeb found from their investigation of the collective responsibility of 4,495 elementary teachers in Chicago that the level of collective responsibility was much higher where students performed favorably on well-publicized standardized tests. In this study, a common factor between the 264 elementary schools involved was that the teachers shared in the responsibility of success, that is, there was a high level of collective responsibility in the school.

*Student body demographic composition.* Although there is not total agreement on the strength of the effect of student population diversity, there is strong evidence that it does exist (Beauboeuf-Lafontant, & Smith, 1996; Metz, 1998; Pearson & Argulewicz, 1987; Portes, & Zady, 2001). Furthermore, in some cases, research has shown that student composition has a significant effect on school factors such as student achievement (Sheehan & Marcus, 1978) and teachers' ratings of students' comprehension and creative initiative (Elliott & Argulewicz, 1983).

Therefore, the composition of the student body of the sample schools is one of importance to this investigation.

*School/class size.* Another factor that potentially influences the degree to which collective responsibility exists in a school is that of school/class size. There is particular interest in this because it has been shown previously that in many cases the size of a school/class strongly impacts related factors, such as student academic achievement (Lee & Loeb, 2000). Keeping in mind that research has shown the level of student academic achievement influences the degree of collective responsibility for student learning, it is probable that the size of a school/class may also influence the degree of teacher collective responsibility for student learning. The literature overwhelmingly supports findings of greater student achievement in smaller schools/classes (Fowler, 1989, 1995; Meier, 1995; Pittman & Haughwout, 1987). Previously much of the work was done through case studies with a limited number of participants. Now, however, many of the studies in this area involve significantly larger sample sizes. For example, Lee and Loeb (2000) completed a study involving 22,599 elementary students in Chicago. From that work, they concluded that after taking into account SES and minority concentration in the 264 separate schools, student achievement was higher in those buildings with smaller enrollments. Other large-scale studies include one that examined the records of 20,000 students in Philadelphia's public high schools, comparing student performance in large and small schools (McMullan et al. 1994); another examining the scores of 13,000 youngsters in Alaska (Huang & Howley, 1993); others investigating the schools of entire states and documenting the effects of school size (Fowler, 1989; Heck & Mayor, 1993); and a growing number of studies based on the experiences of nearly 12,000 students in 800 high schools nationwide (Lee & Smith, 1994; Lee et al. 1995).

The consensus from these studies was that student learning was greater in smaller schools/classes. Additionally, Biddle and Berliner (2002) completed a meta-analysis of research into the effects of smaller class size at the elementary level that also supported the conclusion that student academic achievement is higher where school/class size is lower. To this, they added that not only are there improvements in student achievement, but the improvements are greater the longer the exposure the students have to small classes. In additional studies, it has been shown that students at all grade levels learn more in small schools than in large schools, although school size and organization tend to play a greater role as students get older (Howley, 1989, 1994; Mosteller, 1995; Lee et al. 1995). Also, at-risk students are much more likely to succeed in small schools than in large schools (Oxley & McCabe, 1990; Wehlage et al., 1987).

A summary of the literature involving school size and student academic achievement, repeatedly finds that greater student learning in smaller schools/classes may be attributed to three key factors: primarily the small size (Walberg & Walberg, 1994; Lee & Smith, 1994; Lee et al., 1995); secondly, an unconventional organizational structure (Bryk & Thum, 1989; Lee et al., 1995), and, additionally, a setting that operates more like a community than a bureaucracy (Bryk & Driscoll, 1988; Bryk et al., 1993; Bryk & Thum, 1989; Lee & Smith, 1994, Wehlage et al., 1987). Thus, the influences of all of these factors are of importance in an investigation of collective responsibility for student learning.

*Teacher leadership roles.* In order for schools to function in an orderly manner, decisions are made by individuals designated as leaders. Thus, the more a teacher has opportunities to participate in leadership positions, the more he will be a part of the decision making process and to exert influence on his peers. Research studies have verified that the greater the degree to which

a teacher participates in leadership roles that create situations for expanded interactions and additional relationships, the greater will be his ability to influence, inform, and persuade others (Bidwell, 2000, 2001). In schools where there is a high level of teacher involvement in leadership roles and where those teachers possess a stronger sense of collective responsibility, it is likely others will also be influenced to share that belief (Frank, 1998). Thus, the degree to which teachers participate in leadership roles also reflect the degree to which teachers share a sense of responsibility for student learning.

*Administrative Leadership.* The principal and other administrative personnel have a strong role in any school. Studies showed that the presence of a strong principal has the potential to increase student academic achievement (Andrews et al., 1988; Edington & Di Benedetto, 1988). Additionally, the principal and other administrative personnel have a strong role in establishing the “culture” or school environment that exists within a given building (Peterson & Deal, 1998). This “culture” encompasses virtually everything that goes on in schools: how staff dress, what they talk about, their willingness to change, the practice of instruction, and the emphasis given student and faculty learning (Deal & Peterson, 1994; Firestone & Wilson, 1985; Newmann & Associates, 1996). This provides an additional reason that the role of the building administrator is vitally important to this investigation. Building administrators serve in numerous capacities including director, leader, manager, decision-maker and allocator of resources. Peterson and Deal (1998) artistically described the roles of school administrators as models, potters, poets, actors, and healers. Additionally, the literature states that the principal's role is evident as a fosterer of positive networking (Aston & Hyle, 1997). Therefore, as the educational

leader, an administrator has the potential to exert strong influence on the collective responsibility of the staff and individual teachers.

### *Previous Attempts to Measure Collective Responsibility*

A large portion of the work done on collective responsibility has been done by Valarie Lee and associated researchers (Lee, Bryk, & Smith, 1993; Lee & Loeb, 2000; Lee, Smith, & Croninger, 1997; Lee & Smith, 1996). Additional studies involving collective responsibility for student learning have also been conducted by Bryk (Bryk & Driscoll, 1988; Bryk, Lee, & Holland, 1993), DuFour (1997, 2002), and Killion (2000). However, all of these previous studies examined collective responsibility from a school-level perspective. Now a proposal is made to examine collective responsibility for student learning from an individual teacher-level perspective, which previously has not been done. Thus, this research project seeks to fill a gap by, first, creating an instrument to examine collective responsibility from the teacher rather than school-level and, second, to extend validity evidence for the collective responsibility instrument.

In doing this, the following questions will be examined:

1. What is the dimensionality of the collective responsibility instrument?
2. How reliable are the rank orderings of the collective responsibility estimates?
3. To what degree do the observed ratings of collective responsibility items fit model-based expected values?
4. Do teachers employ the rating structure in the manner that the author intended?
5. Is there a difference in the level of collective responsibility reported between male and female educators?

## Research Methodology

### *Sample*

The target population for this study is U.S. public school teachers in grades K - 12. The grouping “teachers” includes all full and part-time classroom instructors, as well as other non-

administrative personnel who routinely interact with students, such as counselors, media specialists, speech therapists, classroom consultants, and others. The sample population for this study consisted of 408 teachers in seven Michigan school districts. There were 268 females and 140 males, although individual respondents were not identified. The school districts were from both the east and west sides of the lower peninsula as well as the upper peninsula. They varied in size, with the largest K-12 student population being 5,133 and the smallest 1,387. The percentage of disadvantaged students in the district ranged from a high of 50.3% to a low of 9%. Permission to administer the survey instrument was obtained through the district Superintendent's office.

### *Instrumentation*

The data collection for this study was done using a survey instrument developed by the author. (See Appendix A). That instrument was composed of 45, four-option, Likert-scale items. There were some additional demographic questions on the original instrument not included in this study. Approximately 180 items covering the aspects of the Developmental Model (*Figure 2*) were originally generated. A review of these items was completed by four university professors in education, with numerous revisions and deletions being made. The resulting final item distribution for the pilot version of the instrument is given in *Table 1*. The cover letter for the instrument (Appendix A) assured the participants that their participation was entirely voluntary, their responses kept confidential, and they could withdraw at any time.

Table 1. Blueprint

	Quad I REPORTER/ Classroom	Quad II REPORTER/ School	Quad III IDENTIFIER/ School	Quad IV IDENTIFIER/ Classroom	Total
1. Shared responsibility by teachers for student learning	23	1, 9	35, 40	24, 27	7
2. Lesson adaptation	14, 21	5	38, 44	30	6
3. Teacher confidence in ability to influence students' learning	16, 20	4	42	25	5
4. Commitment to common mission, goals, objectives and sense of value for student learning	15, 19	6, 10	37	32, 33	7
5. Sharing and reciprocity between staff	22	7, 11	36, 45	28	6
6. Sense of trust between staff members	13	2, 12	39, 43	26, 34	7
7. Control over learning environment	17, 18	3, 8	41	29, 31	7
	11	12	11	11	45

*Data Collection*

Individual building administrators for all the schools within the seven selected districts were contacted and a convenient time arranged for the survey to be administered at a routinely scheduled faculty meeting, where it was introduced and distributed by the author. The survey was completed in 10 to 15 minutes. As was expected, the response rate from this type of administration was high.

*Analysis*

Five aspects of the survey instrument were investigated: dimensionality, reliability, item fit indices, rating scales, and differential item functioning.

*Dimensionality.* The first item of analysis was *dimensionality*, which is the number of aspects that constitute a construct. A confirmatory factor analysis was conducted, based on the theoretical model. Using AMOS, the fit of the unidimensional and proposed four-factor model was compared. AMOS employs a likelihood ratio chi-squared statistic ( $\chi^2_{LR}$ ) based on the Schwartz's Bayesian Information Criterion (BIC): ( $\chi^2_{LR} = G^2_{\text{Simple}} - G^2_{\text{Complex}}$ ), where  $G^2$  is the BIC Deviance statistic for the model. The  $\chi^2_{LR}$  statistic is distributed with degrees of freedom equal to the difference of the number of parameters in the complex and simple models (McCullagh & Nelder, 1990). Because the  $\chi^2_{LR}$  statistic is sensitive to sample size, the Bayesian Information Criterion proportionality constant ( $BIC_{PC}$ ) was also considered.

$$BIC_{PC} = \frac{G^2}{df}$$

$$\text{where } G^2 = [-2 \times \ln(L)] + [p \times \ln(n)]$$

$L$  = Likelihood of the data given the model

$p$  = the number of parameters in the model

$n$  = the number of observations in the data set

The  $BIC_{PC}$  depicts the fit of the model in question with regard to the number of parameters that it contains (Raferty, 1986). Models with acceptable fit should have a  $BIC_{PC}$  value close to 3.0.

Unfortunately, the results of confirmatory factor analysis yielded a  $BIC_{PC}$  greater than 3.0 for both the unidimensional model and the proposed four-factor model. Consequently, an exploratory factor analysis, using SAS (version 8e) and *WINSTEPS* (1999) was completed to

identify the factor loadings for each item. Using these factor loadings as a guideline, a new model was created. Items that did not have a substantial loading on any factor or did not correlate highly with the total score were removed. Additionally, the wording of the items for each proposed factor was examined to establish a substantive justification for the number of factors. From those results a multidimensional model was constructed and a confirmatory analysis completed to determine the fit of the revised model. Modification indices were also employed to improve the model. A diagram of the final model is shown in Appendix D.

After the multidimensional model was established as an appropriate one, the dimensionality of each factor was evaluated separately. This was done to determine if the instrument should be examined using multidimensional methods or as a series of separate subscales. The results of this analysis established the instrument should be analyzed as separate subscales. Thus the Rasch Rating Scale Model was used for further analysis. That model is:

$$\phi_{nik} = \frac{\pi_{nik}}{\pi_{nik-1} + \pi_{nik}} = \frac{\exp[\Theta_n - (\delta_i + \tau_k)]}{1 + \exp[\Theta_n - (\delta_i + \tau_k)]}, \text{ where tau is the threshold between categories}$$

*Reliability.* The second aspect, *internal consistency reliability*, may be thought of as degree to which test scores are free of measurement errors for a particular group. This was evaluated using the Reliability of Person Separation obtained through SAS and *WINSTEPS*. For this statistic, a measure of 1 represents perfect consistency and one above 0.9 is preferred. Nunnally (1978) suggests a widely used “rule of thumb” for acceptable reliability coefficient to be 0.70. The target value for the instrument in this study was 0.8, which is in line with other that of other survey instruments in education.

*Fit.*

For this, the *standardized mean-square outfit statistics* was calculated, for items in each subscale:

$$Z_{outfit} = \frac{\sum_{i=1}^I z_{ni}^2}{I}$$

where  $Z_{ni}^2$  is the square of the standardized residual for the response of person  $n$  to item  $i$ . This index, generated for each item in the data, indicates the degree to which the observed scores are consistent with the expectations generated by the model. Fit statistics are reported as chi-square divided by its degrees of freedom, resulting in an expected value of 1.00 and a range from 0.00 to  $\infty$ . The outfit MNSQ is sensitive to large residuals from pairings of item difficulty and ability estimates that are far apart on the underlying scale. Elements with outfit MNSQ statistics from 0.70 to 1.40 illustrate adequate fit to the measurement model (Wright & Linacre, 1994), although cut-off MNSQ values may be somewhat arbitrary. If there is consistency, then it is assumed that the observations behave in the manner that the model depicts. If consistency is lacking then the individual item is behaving in a way that is inconsistent with the model. These inconsistencies may arise due to a variety of reasons, such as an incorrectly specified latent trait model. Values less than 0.70 indicate less variability between observed and expected scores than the model predicts and will be ignored in this study. In this study, items were flagged as being potentially problematic if the standardized mean-square outfit index exceeded 4.00 (Smith, 2001). Flagged items were examined for a plausible explanation. For item misfit, if it appeared the problem was with the quality of the item or a cueing of the correct answer, revisions were made. Deletion was considered if the item displayed both a statistical misfit as well as poor wording.

*Rating scale.* This provided additional information about the degree to which the respondents utilized the response scale in the manner which was intended and was evaluated using guidelines developed by Linacre (2002). To do this, the data were calibrated to the unidimensional Rasch Rating Scale Model (RSM; Wright & Masters, 1982) using WINSTEPS (Wright & Linacre, 1998). This was appropriate because each item shared a common rating scale structure (i.e.,  $\delta_{ik} = \delta_{jk}$  for all items,  $i$  and  $j$  across the various dimensions). In these analyses, unidimensionality within each subscale was based on the results of a factor analysis, eigenvalues, and scree plot. The guidelines suggested by Linacre (2002) are as follows:

- a) *All items and rating scales need to be oriented with a shared latent variable.* This was done using a Pearson Correlation between the polytomous responses to a single test item and the examinee abilities. The correlation determined whether participants' rank ordering on the item was similar to their rank ordering on the composite of the remaining items. A low correlation (i.e.,  $r < 0.30$ ) indicates that the item might not truly capture the underlying variable in the same way as other items. Items with item-total correlations smaller than 0.30 should be examined for possible explanation, resulting in modification or deletion.
- b) *All rating categories must have at least 10 observations.*
- c) *Distribution of ratings for each category should be unimodal.* The observation frequency across categories for each rating scale was examined to ensure guidelines 2 and 3 were met.
- d) *Average measures within each rating scale should advance monotonically with the category.* In other words, respondents with higher total scores within each rating scale will choose higher categories and vice versa. Average measures of participants who chose each of the categories were calculated and examined to ensure that the average advanced monotonically with each category.
- e) *The outfit index should be less than 2.0 for each category.* This guideline ensures that the rating scales are used in the way they were intended to be used. The outfit index was calculated by averaging the squared standardized residuals across all persons who responded using a particular category for all items sharing the same rating scale and was included previously under the heading *Fit*.
- f) *Category thresholds should increase with categories.* As Linacre (2002) asserted, increasing amounts of the underlying variable in a respondent correspond to

increasing probabilities of the respondent being observed in higher categories of the rating scale. This guideline was examined by 1) creating probability characteristic curves for all categories and affirming that each category was in turn most probable; and 2) ensuring that the thresholds ( $\tau$ 's) increased with the rating scale categories (*WINSTEPS*, Table 3.2, Table 21).

- g) *Category thresholds should increase by at least 1.0 logits and no more than 5 logits.* This guideline ensures that the number of categories is precise enough and each category has adequate utility.
- h) *Ratings should imply measures and measures should imply ratings.* This guideline may be evaluated by examining the observations that lie outside of their expected rating categories or measurement zones (as determined by thresholds, i.e., the area below  $\tau_1$  is zone 1, the area between  $\tau_1$  and  $\tau_2$  is zone 2, etc.). Small values for coherence (i.e., percentages close to 0) are considered problematic, with acceptable levels at 39% or greater.

*Coherence* refers to the degree to which the observed ratings match the modeled expectations for a particular rating scale category, and vice versa. Each rating can be depicted as belonging to a rating category. The logit scale upon which teachers are located can be demarked into measurement zones that are defined by the locations of the category thresholds. The location of each teacher ( $\theta$ ) can be associated with one measurement zone (X axis—one zone per rating scale category with a zone representing the expected rating for that teacher-by-item combination). The observed ratings assigned by that teacher ( $x$ ) can then be placed in one of the rating scale categories (Y axis).

*Differential item functioning (DIF).* Within the educational literature there is an abundance of findings indicating gender differences also found throughout society (Cole, 1997; Yuen & Ma, 2002; Bress, 2000; Sadker & Sadker, 1986). Thus, gender groups were selected to examine possible DIF in this instrument. The intent was to determine if male and female respondents who had the same levels of collective responsibility had different probabilities of endorsing the item. This was done using the follow steps:

- 1) Item response data for female (focal) and male (reference) were scaled separately.
- 2) Item endorsability was standardized (same mean and standard deviation of the item difficulties for both groups) (Hambelton & Swaminathan, 1985).
- 3) Raju's *Signed Area Index* (SAI) and  $Z_{SAI}$  was computed for each item. This was done using the following formula:

$$SAI = \hat{\delta}_{reference} - \hat{\delta}_{focal} \quad (SAI; \text{Raju, 1988; 1990})$$

where  $\delta_i$  is the item calibration obtained from the data for group  $i$ .

The standardized z-SAI was obtained via the following formula,

$$Z_{SAI} = \frac{\hat{\delta}_R - \hat{\delta}_F}{\sqrt{SE^2_{\delta_R} + SE^2_{\delta_F}}}$$

- 4) Items having statistically significant DIF and large effect sizes (logit > 0.5) were identified (Draba, 1977).
- 5) Substantive explanations for the observed DIF was sought.

An item was flagged if the absolute difference between the endorsability for the two groups was  $\geq 0.50$  logits (Scheuneman & Subhiyah, 1998), or, as a standardized z-SAI, the values to be noted were those greater than 2. *WINSTEPS, Table 3.1* was used for this.

## Results

*What is the dimensionality of the collective responsibility instrument?*

### *Preliminary Analyses*

First, using AMOS, a confirmatory factor analysis was conducted of the unidimensional model. The results indicated a poorly fitting model. ( $\chi^2_{(935)}=3367.781$ ,  $BIC_{PC}=3.602$ ), indicating potential multidimensionality. (The results from AMOS for all models are given in *Table 5*.) Subsequently, a principal component analysis of residuals from the Rasch model was used to identify the number of factors in the model. In addition to the factor

represented by the Rasch measures, *WINSTEPS* extracted five residuals factors with eigenvalues greater than 1 (*Table 2*).

*Table 2.* The eigenvalues and the percentage of variance explained for each residual factor

Factor	Standardized Residual	Rescaled	Percent of Variance Explained	
Rasch	37.80	20.333	46.21	
2	3.90	2.098	4.77	
3	3.00	1.614	3.67	
4	2.50	1.345	3.06	
5	2.10	1.130	2.57	2.57
	Residual = 44		Total = 81.8	

Next a rotation of the factors was planned to get a clearer picture of the factor loadings. First, an examination of the correlation of the factors was done to support the choice of rotational procedure. *Table 3* shows factor correlations  $>0.2$  so an oblique rotation was appropriate.

*Table 3.* Factor correlations

	Inter-Factor Correlation			
	Factor1	Factor2	Factor3	Factor4
Factor1	1.00	.46	.28	.30
Factor2	.46	1.00	.31	.25
Factor3	.28	.31	1.00	.36
Factor4	.30	.25	.36	1.00

The complete factor loadings resulting from that oblique rotation are given in APPENDIX B. To determine whether these residual factors were reliably measured, the recommendations of Stevens (1996) were applied. Specifically, he defines a factor as being reliability defined when any of the following criteria are met: (a) a component has three or more loadings with absolute values greater than .80, (b) a component has four or more loadings with absolute values greater than 0.60, or (c) a component has ten or more loadings with absolute values greater than 0.40, provided the sample size is above 150. *Table 4* shows the number of

item loadings for each category. As shown in *Table 4*, factors 5 and 6 did not meet Stevens' criteria. Therefore, the five and six-factor models were not considered further.

*Table 4.* Residual factor item loadings

Residual Factor	Loadings $\geq 0.8$	Loadings $\geq 0.6$	Loadings $\geq 0.4$
desired number	$n \geq 3$	$n \geq 4$	$n \geq 10$
Rasch	1	<b>8</b>	13
2	0	<b>5</b>	11
3	0	<b>4</b>	10
4	2	<b>3</b>	10
5	0	0	2
6	0	1	1

Next, an examination of the content of the items loading on each of the first four factors was made. The following gives the wording of each item, by factor, based on the loadings.

**FACTOR 1: Teacher as reporter of classroom environment of others**

13. I know what happens in other teachers' classrooms.
14. I know the extent to which other teachers use various teaching methods to improve student achievement.
15. I know the extent to which other teachers in this school are continually learning.
16. I have observed how other teachers relate to their students.
17. I know how other teachers deal with difficult students in their classrooms.
18. I know whether other teachers in this school press students to achieve.
19. I have observed other teachers who try to help students who are failing.
22. I know the extent to which teachers exchange educational materials and techniques
23. I know the extent to which other teachers in this school are applying new teaching techniques

**FACTOR 2: Teacher as reporter of school climate**

1. In this school, teachers feel responsible that all students learn.
2. In this school, teachers and administration work together.
3. In this school, teachers hold prominent leadership roles.
5. Teachers in this school adapt their lessons to enable students to learn.
6. The teachers in this school support the school mission.
7. Teachers in this school help each other do their best.
10. In this school, teachers frequently discuss instructional improvement.
11. In this school, teachers participate equally on committees.
12. In this school, teachers are supportive of each other.

FACTOR 3: Teacher as self identifier of responsibility to the collective

- 37. I work with the staff and administration to solve school-related problems.
- 39. I talk with other faculty and staff members about instructional issues.
- 40. I hold the same educational values as other teachers in this school.
- 41. I work with others to control disruptive behavior.
- 42. I work with teachers and administrators to keep students in school.
- 43. I help resolve staff conflicts.
- 44. I work with other teachers and /or administrators on instructional improvement
- 45. I am helped by other teachers.

FACTOR 4: Teacher as self identifier of own classroom environment

- 24. I am responsible for the performance of my students.
- 25. I know how to teach students with diverse abilities.
- 29. I am responsible for making sure my class runs smoothly every day.
- 30. I know how to teach students with diverse backgrounds.
- 33. I adapt my teaching methods to meet my students' needs.
- 34. I support the mission of this school.

The items that loaded on the first factor involved the teacher as reporter of the classroom environment of others. The second factor items reflected the teacher as a reporter of school climate. The third included items in which the teacher was a self-identifier of their responsibility to the collective. The fourth was items that asked the teacher to self identify his own classroom environment. As a result of combining the factor loading information and the substantive interpretation of the item wording, a four-factor model was developed.

As an attempt to cross-validate the model indicated by the exploratory factor analyses, confirmatory factor analytic procedures were used to compare the model fit of the four-factor model. The results indicated that the four-dimensional model fit the data better than the unidimensional model ( $\chi^2_{(458)} = 1294.985$ ). The values are shown in *Table 5*.

To improve this model, from the modification indices provided by AMOS, five correlations between errors within a factor were added. A diagram of the final configuration is given in APPENDIX D. This resulted in a final discrepancy index of 2.543, ( $\chi^2_{(453)} = 1151.786$ ).

*Table 5. Model fit to data*

Model	discrepancy/df	CMIN	df	parameters	RMSEA	GFI	adj GFI
Unidimensional	3.602	3367.781	935	101	0.101	0.598	0.555
4-factor	2.827	1294.985	458	70	0.085	0.735	0.695
4-factor with modifications	2.543	1151.786	453	75	0.083	0.758	0.712

As an additional verification that the four subscales could be analyzed using the Rasch rating scale model as proposed, an examination of the scree plot and eigenvalues for each was completed. These are given in APPENDIX E. These results supported a unidimensional model for each factor, which justified the use of the Rasch Rating Scale Model in the subsequent analyses. Therefore, the instrument was analyzed with four separate subscales as specified in Table 6.

*Table 6. Four-factor model*

FACTOR	ITEMS
1. REPORTER/CLASSROOM ENVIRONMENT Teacher as reporter of classroom environment of others	13,14,15,16, 17,18,19,22,23
2. REPORTER/SCHOOL CLIMATE Teacher as a reporter of school climate	1,2,3,5,6, 7,10,11,12
3. SELF-IDENTIFIER/ RESPONSIBILITY TO THE COLLECTIVE Teacher as identifier of self responsibility	37,39,40,41, 42,43,44,45
4. SELF-IDENTIFIER/ CLASSROOM ENVIRONMENT Teacher as identifier of own classroom	24,25,29, 30, 33,34

*How reliable are the rank orderings of the collective responsibility estimates?*

The reliability of person separation coefficients ranged from 0.99569 to 0.99822 across the subscales (Table7).

Table 7. Reliability of person separation by subscale factor

	Reliability of Person Separation
Subscale Factor	
1: REPORTER/classroom	0.90770
2: REPORTER/school	0.88220
3: IDENTIFIER/school	0.84562
4: IDENTIFIER/classroom	0.85189

Each of these is above the desired level of 0.80. Therefore, I concluded the rank orderings of the collective responsibility estimates were sufficiently reliable.

*To what degree do the observed ratings of collective responsibility items fit model-based expected values?*

On the original 45-item instrument, two items displayed a misfit index mean square value greater than 1.4: items 27 and 35. However, both of these had been previously removed from the pilot instrument. In looking at each of the four factors independently, only factor 4 had any items showing misfit. That was item 37, with outfit MNSQ = 1.41, ZSTD = 3.9. The wording of this item is “I help resolve conflicts between the school and parents/community.” Although the item did show a misfit slightly greater than the suggested guideline, this item is important to instrument content, and the misfit was only 0.01. Therefore, it was decided that this small amount of misfit could be tolerated. Hence, no additional items were removed due to misfit.

*Do teachers employ the rating structure in the manner that the author intended?*

Each subscale was analyzed separately but the results are presented collectively for parsimony. The analysis showed that each of the subscales met all of the Linacre (2002) requirements with the exception of coherence.

- 1) *All items and rating scales need to be oriented with a shared latent variable.* Compliance with this requirement is shown by Pearson Correlation Correlations  $\geq 0.3$  (Table 8).

Table 8. Correlation of item with total score, n = 408

	ITEM	CORRELATION WITH TOTAL
Factor 1 Respondent/ classroom	Item13	0.604
	Item14	0.628
	Item15	0.589
	Item16	0.548
	Item17	0.557
	Item18	0.580
	Item19	0.544
	Item22	0.603
	Item23	0.680
	Factor 2 Respondent/ school	Item1
Item2		0.587
Item3		0.607
Item5		0.361
Item6		0.494
Item7		0.601
Item10		0.632
Item11		0.522
Factor 3 Identifier/ school	Item12	0.605
	Item37	0.572
	Item39	0.444
	Item40	0.602
	Item41	0.599
	Item42	0.483
	Item43	0.456
	Item44	0.523
Factor 4 Identifier/ classroom	Item45	0.558
	Item24	0.354
	Item25	0.337
	Item29	0.333
	Item30	0.314
	Item33	0.377
	Item34	0.450

Table 8 shows all of the correlations were greater than 0.3. Thus, I concluded that all items and rating scales were oriented with a shared latent variable.

2) All rating categories must have at least 10 observations. The table of values obtained from WINSTEPS, Table 3.2 shows that all categories had at least 10 observations (Table 9).

Table 9. Number of observations in rating category by subscale factor

Rating Category	1 = SD	2 = D	3 = A	4 = SA
FACTOR				
1 Respondent/class	134	1482	1684	336
2 Respond/school	130	790	1998	664
3 Identifier/school	106	608	1856	598
4 Identifier/class	22	134	1300	728

- 3) *Distribution of ratings for each category should be unimodal.* Table 9 also shows this requirement had been met, with the largest number in category 3.
- 4) *Average measures within each rating scale should advance monotonically with the category.* The values in Table 10 obtained from WINSTEPS, Table 3.2 show that as the category increased, the average measure (mean of measures in category) also increased.

Table 10. Average category measure by subscale factor

Factor	1 Respondent/ class	2 Respondent/ school	3 Identifier/ school	4 Identifier/ class
Category	Measure			
1 = SD	-3.94	-1.94	-1.36	-0.37
2 = D	-1.62	-0.41	-0.28	0.27
3 = A	1.40	1.36	1.27	1.89
4 = SA	4.35	3.34	3.18	4.20

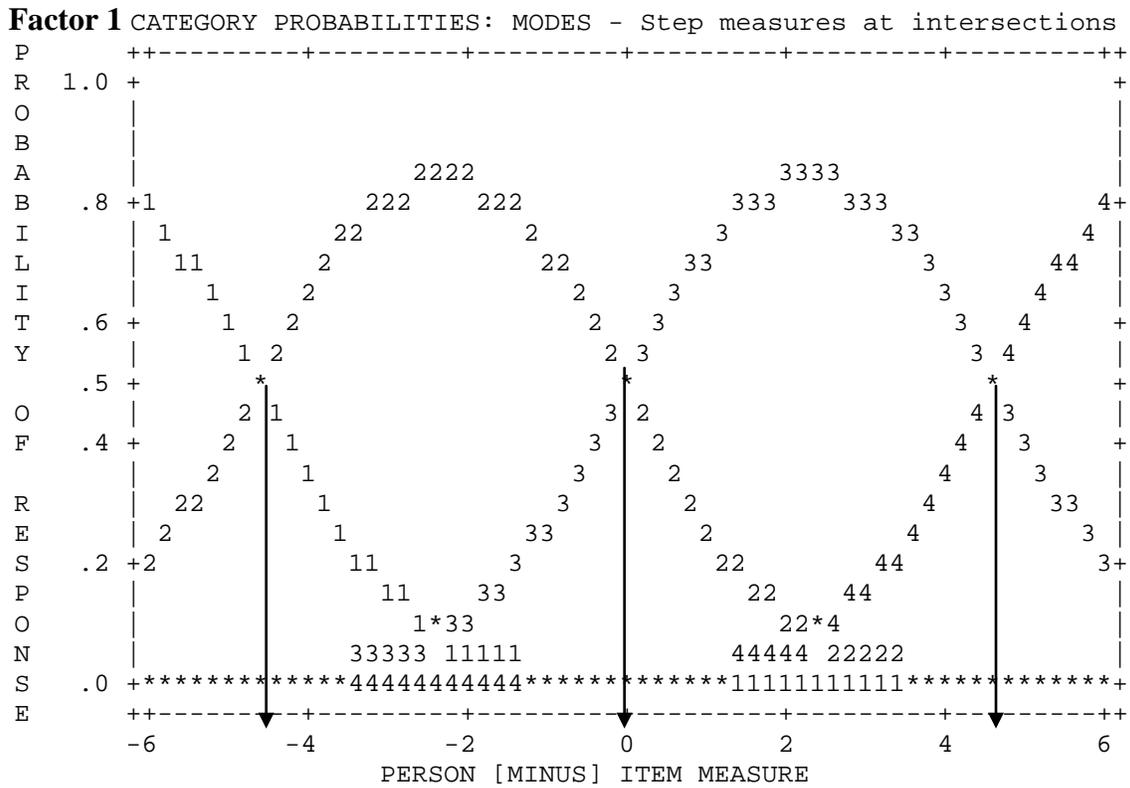
- 5) *The outfit index should be less than 2.0 for each category.* This output, also from WINSTEPS, Table 3.2, shows all values were less than 2.0 (Table 11).

Table 11. Outfit index

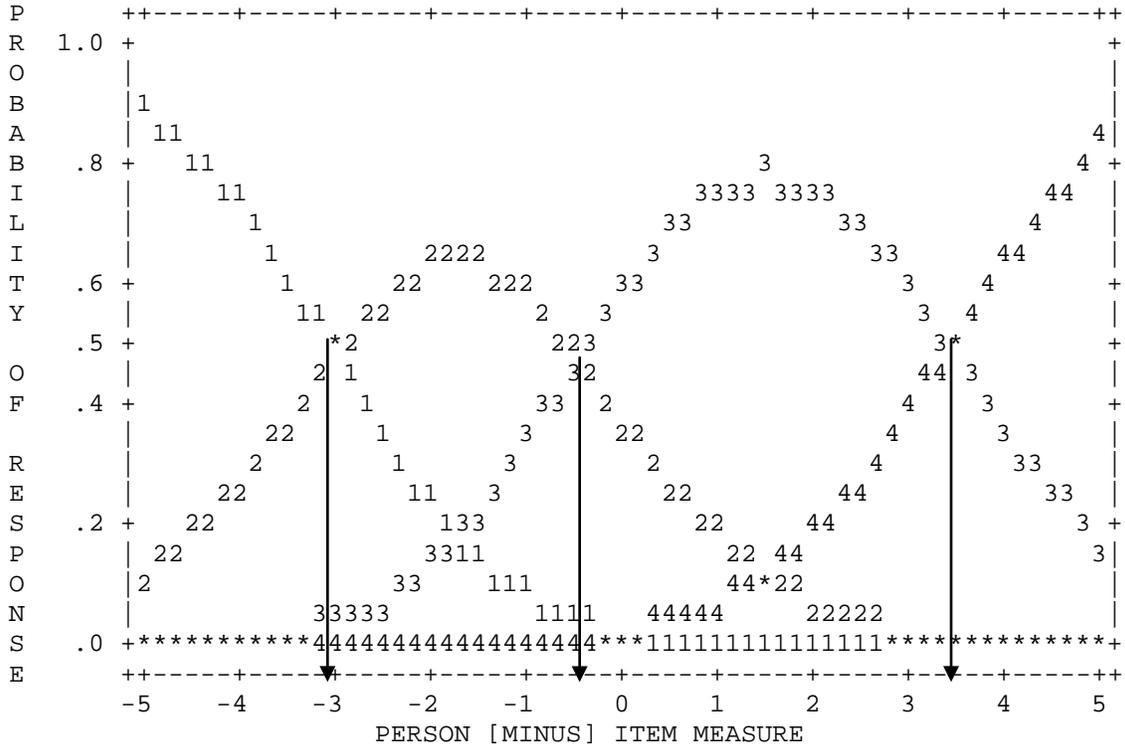
Factor	1 Respondent/ class	2 Respondent/ school	3 Identifier/ school	4 Identifier/ class
Category	OUTFIT MNSQ	OUTFIT MNSQ	OUTFIT MNSQ	OUTFIT MNSQ
1 = SD	0.96	1.40	1.58	1.89
2 = D	0.90	0.87	0.95	1.03
3 = A	0.95	0.93	0.86	0.84
4 = SA	1.27	1.03	0.94	0.87

6) *Category thresholds should increase with categories.* The WINSTEPS graphs in Figure 4 show that the threshold  $\tau$ -values on the horizontal axis increased as the categories increased.

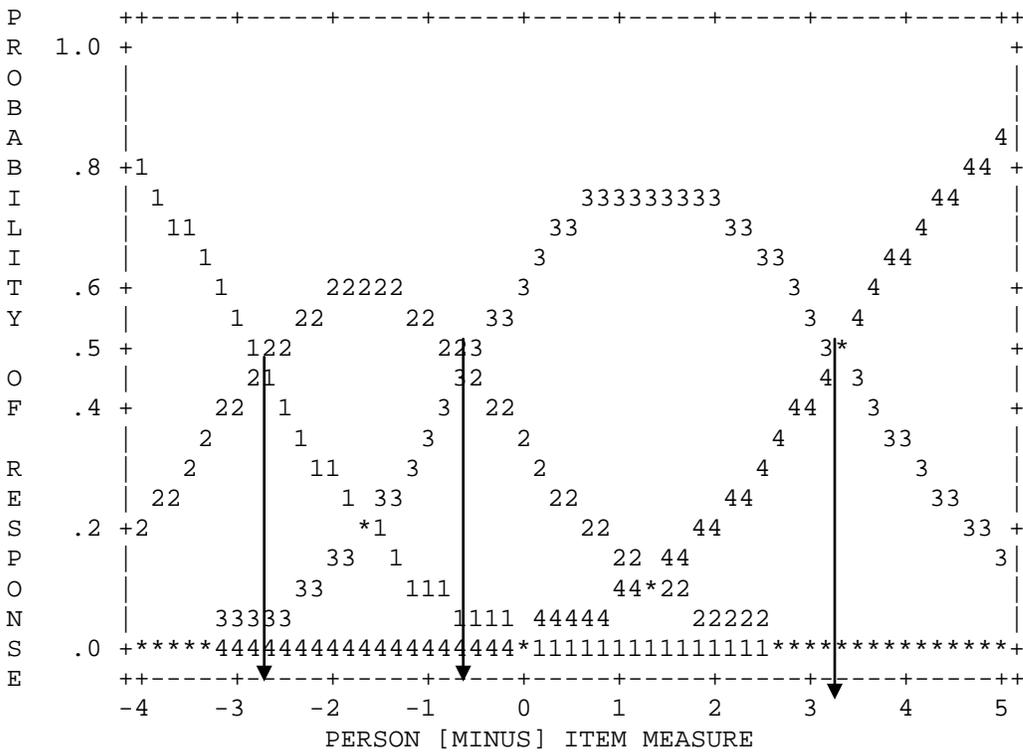
Figure 4. Category Thresholds



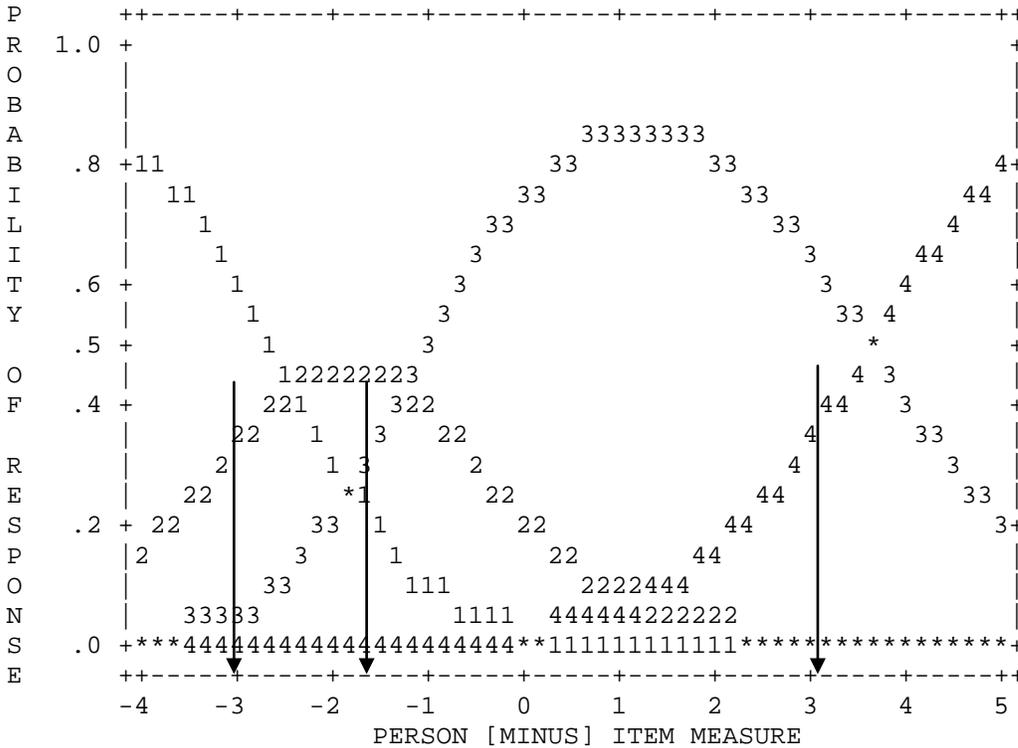
**Factor 2** CATEGORY PROBABILITIES: MODES - Step measures at intersections



**Factor 3** CATEGORY PROBABILITIES: MODES - Step measures at intersections



**Factor 4** CATEGORY PROBABILITIES: MODES - Step measures at intersections



- 7) *Category thresholds should increase by at least 1.0 logits and no more than 5 logits.* The values obtained from *WINSTEPS*, *Table 3.2*, and presented in *Table 12* show that the increases were in the range they should be.
- 8) *Ratings should imply measures and measures should imply ratings.* These values are shown in *Table 13*. Acceptable levels are at 39% or greater. There is definitely a concern here, as each of the level one “Category implies Measure” values do not meet the 39% requirement. The percentage of responses that should have been in the “strongly disagree” category were not there.

Table 12. Thurston Threshold values by factor

	Category	Thurstone Threshold	Difference between Thresholds (in logits)
Factor 1 Respondent/ classroom	1		
	2	-4.66	
	3	-0.01	4.65
	4	4.66	4.67
Factor 2 Respondent/ school	1		
	2	-3.06	
	3	-0.40	2.66
	4	3.45	3.95
Factor 3 Identifier/ school	1		
	2	-2.81	
	3	-0.50	2.31
	4	3.31	3.81
Factor 4 Identifier/ classroom	1		
	2	-2.62	
	3	-1.02	1.60
	4	3.64	4.66

Table 13. Coherence by factor subscale

	Category	COHERENCE	
		Measure implies Category	Category implies Measure
Factor 1 Respondent/ classroom	1	77%	31%
	2	76%	79%
	3	74%	80%
	4	70%	48%
Factor 2 Respondent/ school	1	71%	30%
	2	59%	51%
	3	68%	83%
	4	71%	43%
Factor 3 Identifier/ school	1	66%	18%
	2	58%	47%
	3	70%	88%
	4	76%	39%
Factor 4 Identifier/ classroom	1	0%	0%
	2	54%	26%
	3	76%	87%
	4	75%	65%

In summary, based on the information provided in the previous tables and graphs, the items met the seven Linacre rating scale requirements reasonable well enough to conclude teachers employed the rating structure in the manner the author intended.

*Is there a different in the level of collective responsibility reported between male and female educators?*

Since gender is such a prominent factor in the literature regarding differential item functioning, it was decided that it had the potential to also be significant in this study. Consequently, differential item functioning was examined by gender, using Raju's Signed Area Index. All of the SAI values are given in APPENDIX F, although only the significant ones are included here. Of the 32 items remaining on the instrument, only two displayed differential item functioning by gender, as determined by an  $SAI \geq 0.5$ . They were items 7, and 24.

Item Number	Logit for Male	Logit for Female	Difference M – F	
7	0.66	0.01	0.65	favors males
24	-0.70	-1.36	0.66	favors males

As shown above, the SAI for item 24 was 0.66, which indicates that to a significant degree, it was more easily endorsed by males. The wording is "I am responsible for the performance of my students." It is understandable that this item could be more easily endorsed by males because in American society responsibility as head of the household is a trait taught to males. It is to be expected that this trait would spill over to the work place. Therefore, I concluded that this finding was in line with what would be expected from a societal perspective rather than bias and no change was warranted.

Item 24 was also more easily endorsed by males, with an SAI of 0.65. The wording of this item is “Teachers in this school help each other do their best.” I think this question accurately reflects a difference between the way men and women seek and receive help. This, coupled with the fact that the item is important to the survey, lead to the decision to leave this question as it was.

It should be noted that the lack of items displaying differential item functioning in this instrument may perhaps be attributed to well written items. However, it is more likely that only two items displaying DIF were found because there is a strong similarity between the thinking of male and female teachers with regard to collective responsibility. The reasons for this similarity might be due to such factors as the way they are socialized into the profession or a common culture among educators. Although this study was not intended to investigate causal inferences, it does open some interesting possibilities for additional investigations.

### *Limitations*

Unfortunately, because the sample size is small ( $n=408$ ), the results have somewhat limited generalizability. This study only examines responses from educators in seven different public school districts, all within the state of Michigan. Although there are certain universal teacher characteristics, it cannot be concluded that this small sample is representative in terms of experience, gender, ethnicity, or other demographic characteristics of teachers throughout the United States. Nor may it be concluded that the seven districts utilized for this study are equally representative of all school districts in the United States.

*Future Research*

Therefore, future research may improve on the generalization of these findings by using a population that is more representative of teachers throughout the United States. This would necessitate a larger sample size and more attention to the demographic composition of the sample. In addition, future research should consider extending the collection of measures of collective responsibility to teachers in non-public schools, as they constitute a rapidly growing sector of the educational community.

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## APPENDIX A: Collective Responsibility Teacher Survey Instrument

As a part of a research project through the College of Education at Michigan State University, teachers in your school are being asked to respond to the following survey. The project is called “National Board Certified Teachers as an Organizational Resource.” The research focus is on understanding the relationship between National Board Certified Teachers and school-level collective responsibility. The data collected from this survey will be used in this project.

Please indicate your voluntary agreement to participate by providing your signature below, then completing and returning this survey. All data collected will be kept confidential. Participating in this study is voluntary, and this survey is expected to take approximately 15 minutes to complete. You may choose not to answer any question or stop at any time.

Although your confidentiality will be protected in all publications by using a pseudonym for each school as well as identification numbers for individual teachers, you or others may be able to discern some of the identities based on reported attributes of the school and person. Some questions may request sensitive information about your commitment to your students and relationships with colleagues and parents. To minimize risks, only the investigators will know respondents' identities and this information will not be shared with anyone beyond the research team, including other teachers and school officials. Further, data will not be reported in a manner that allows individuals to be identified. Your privacy will be protected to the maximum extent allowable by law. Note that nothing will be published from these data until 2004.

If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact – anonymously, if you wish – Ashir Kumar, M.D., Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: (517) 355-2180, fax: (517) 432-4503, e-mail: [ucrihs@msu.edu](mailto:ucrihs@msu.edu), or regular mail: 202 Olds Hall, East Lansing, MI 48824.

If you have any questions about this study, please feel free to contact the individuals below:

Gary Sykes  
410A Erickson Hall  
East Lansing, MI  
(517) 353-9337  
E-mail: [garys@msu.edu](mailto:garys@msu.edu)

Linda Chard  
118 Erickson Hall  
East Lansing, MI  
(810) 603-1940  
E-mail: [chardlin@msu.edu](mailto:chardlin@msu.edu)

*You indicate your voluntary agreement to participate by signing below, and completing and returning this questionnaire.*

Signature \_\_\_\_\_

Date \_\_\_\_\_

Name (*please print*) \_\_\_\_\_

**Background Characteristics**

*Please circle the appropriate response.*

Gender:      Female      Male

Teaching area this year (circle all that apply)

- Art
- Career and Technical Education
- English
- Health Education
- Math
- Music
- Physical Education
- Science
- School Counseling
- Social Studies
- Special Education, K-12
- World Languages other than English
- Other -- specify \_\_\_\_\_

Grade level taught this year (circle all that apply)

- Pre-K   K   1   2   3   4   5   6   7   8   9   10   11   12   Not in a classroom

Race (circle all that apply)

- Asian
- African American/Black, non-Hispanic
- Hispanic/Latino
- Native American/American Indian
- Caucasian/White, non-Hispanic
- Other -- specify \_\_\_\_\_

*Please circle the appropriate response.*

Highest level of education completed

- Bachelors
- Masters
- Beyond Masters
- Educational Specialist
- Doctorate

Mother's highest level of education

- Below high school
- High school
- Some beyond high school
- 2 year college
- 4 year college
- Masters
- Doctorate

Years teaching: \_\_\_\_\_ (including this year)

Years teaching in this school: \_\_\_\_\_ (including this year)

In what type of school do you teach? \_\_\_\_\_ Traditional; grades: \_\_\_\_\_

\_\_\_\_\_ Magnet/Gifted and Talented

\_\_\_\_\_ Alternative Education/At-Risk

\_\_\_\_\_ Charter

\_\_\_\_\_ Private/Religious Affiliate

Collective Teacher Beliefs				
<p>This survey is designed to help us gain a better understanding of faculty perceptions of their school and the learning environment.</p> <p><u>Directions:</u> Please indicate level of agreement with each statement by circling the descriptor that best depicts your opinion. The scale of responses ranges from “Strongly Disagree” (1) to “Strongly Agree” (4). Your answers are confidential.</p> <p>Please respond to each of the questions by considering the <i>current</i> conditions in your school.</p>	Strongly Disagree	Disagree	Agree	Strongly Agree
	1. In this school, teachers feel responsible that all students learn.	(1)	(2)	(3)
2. In this school, teachers and administration work together.	(1)	(2)	(3)	(4)
3. In this school, teachers hold prominent leadership roles.	(1)	(2)	(3)	(4)
4. Teachers in this school are prepared to teach the subjects they are assigned.	(1)	(2)	(3)	(4)
5. Teachers in this school adapt their lessons to enable students to learn.	(1)	(2)	(3)	(4)
6. The teachers in this school support the school mission.	(1)	(2)	(3)	(4)
7. Teachers in this school help each other do their best.	(1)	(2)	(3)	(4)
8. In this school, teachers have control over setting performance standards for students.	(1)	(2)	(3)	(4)
9. In this school, few external factors impeded the teachers.	(1)	(2)	(3)	(4)
10. In this school, teachers frequently discuss instructional improvement.	(1)	(2)	(3)	(4)
11. In this school, teachers participate equally on committees.	(1)	(2)	(3)	(4)
12. In this school, teachers are supportive of each other.	(1)	(2)	(3)	(4)
13. I know what happens in other teachers’ classrooms.	(1)	(2)	(3)	(4)

<p><u>Directions:</u> Please indicate level of agreement with each statement by circling the descriptor that best depicts your opinion. The scale of responses ranges from “Strongly Disagree” (1) to “Strongly Agree” (4). Your answers are confidential.</p> <p>Please respond to each of the questions by considering the <i>current</i> conditions in your school.</p>	Strongly Disagree	Disagree	Agree	Strongly Agree
14. I know the extent to which other teachers use various teaching methods to improve student achievement.	(1)	(2)	(3)	(4)
15. I know the extent to which other teachers in this school are continually learning.	(1)	(2)	(3)	(4)
16. I have observed how other teachers relate to their students.	(1)	(2)	(3)	(4)
17. I know how other teachers deal with difficult students in their classrooms.	(1)	(2)	(3)	(4)
18. I know whether other teachers in this school press students to achieve.	(1)	(2)	(3)	(4)
19. I have observed other teachers who try to help students who are failing.	(1)	(2)	(3)	(4)
20. I know which teachers in this school have subject matter expertise.	(1)	(2)	(3)	(4)
21. I know which teachers in this school are effective in their classrooms.	(1)	(2)	(3)	(4)
22. I know the extent to which teachers exchange educational materials and techniques.	(1)	(2)	(3)	(4)
23. I know the extent to which other teachers in this school are applying new teaching techniques.	(1)	(2)	(3)	(4)
24. I am responsible for the performance of my students.	(1)	(2)	(3)	(4)
25. I know how to teach students with diverse abilities.	(1)	(2)	(3)	(4)

<p><u>Directions:</u> Please indicate level of agreement with each statement by circling the descriptor that best depicts your opinion. The scale of responses ranges from “Strongly Disagree” (1) to “Strongly Agree” (4). Your answers are confidential.</p> <p>Please respond to each of the questions by considering the <i>current</i> conditions in your school.</p>	Strongly Disagree	Disagree	Agree	Strongly Agree
26. I have the same goals in my classroom as other teachers in this school.	(1)	(2)	(3)	(4)
27. Negative attitudes do not interfere with my students’ academic success.	(1)	(2)	(3)	(4)
28. Ideas I get from other teachers are a real benefit to me.	(1)	(2)	(3)	(4)
29. I am responsible for making sure my class runs smoothly every day.	(1)	(2)	(3)	(4)
30. I know how to teach students with diverse backgrounds.	(1)	(2)	(3)	(4)
31. I have control over school issues that affect me and my students.	(1)	(2)	(3)	(4)
32. I am responsible for the performance of all students in this school.	(1)	(2)	(3)	(4)
33. I adapt my teaching methods to meet my students’ needs.	(1)	(2)	(3)	(4)
34. I support the mission of this school.	(1)	(2)	(3)	(4)
35. Routine duties and paperwork do not interfere with my teaching.	(1)	(2)	(3)	(4)
36. Other teachers come to me for help with instructional issues.	(1)	(2)	(3)	(4)
37. I work with the staff and administration to solve school-related problems.	(1)	(2)	(3)	(4)

<p><u>Directions:</u> Please indicate level of agreement with each statement by circling the descriptor that best depicts your opinion. The scale of responses ranges from “Strongly Disagree” (1) to “Strongly Agree” (4). Your answers are confidential.</p> <p>Please respond to each of the questions by considering the <i>current</i> conditions in your school.</p>	Strongly Disagree	Disagree	Agree	Strongly Agree
38. I help resolve conflicts between the school and parents/community.	(1)	(2)	(3)	(4)
39. I talk with other faculty and staff members about instructional issues.	(1)	(2)	(3)	(4)
40. I am helped by other teachers.	(1)	(2)	(3)	(4)
41. I work with others to control disruptive behavior.	(1)	(2)	(3)	(4)
42. I work with teachers and administrators to keep students in school.	(1)	(2)	(3)	(4)
43. I help resolve staff conflicts.	(1)	(2)	(3)	(4)
44. I work with other teachers and /or administrators on instructional improvement.	(1)	(2)	(3)	(4)
45. I hold the same educational values as other teachers in this school.	(1)	(2)	(3)	(4)

46a. Is there a school improvement team? *(Please circle the appropriate response)*

Yes                      No

46b. If so, are you a member of the school improvement team? *(Please circle the appropriate response)*

Yes                      No

## APPENDIX B: Factor Loading from Oblique Rotation

The FACTOR Procedure  
 Rotation Method: Promax (power = 3) **Oblique Rotation**

## Factor Structure (Correlations)

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
item1	17	<b>77 *</b>	25	17	17	13
item2	38	<b>51 *</b>	38	29	-2	39
item3	38	<b>70 *</b>	32	37	19	33
item4	18	31	-5	11	22	6
item5	20	<b>76 *</b>	13	8	38	5
item6	32	<b>70 *</b>	24	15	16	29
item7	46	<b>70 *</b>	15	30	11	-3
item8	28	19	11	9	10	-2
item9	29	24	27	4	-5	13
item10	46	<b>58 *</b>	37	31	28	17
item11	29	<b>57 *</b>	27	34	6	9
item12	42	<b>56 *</b>	34	47	6	20
item13	<b>78 *</b>	18	18	17	17	35
item14	<b>78 *</b>	17	28	35	16	29
item15	<b>77 *</b>	27	37	29	6	28
item16	<b>74 *</b>	25	26	28	26	24
item17	<b>82 *</b>	18	35	40	25	27
item18	<b>76 *</b>	34	45	25	30	14
item19	<b>57 *</b>	41	2	20	30	-13
item20	36	17	-18	14	22	-23
item21	24	16	-12	16	31	-11
item22	<b>69 *</b>	30	28	40	18	-4
item23	<b>66 *</b>	37	52	51	20	19
item24	10	18	-1	<b>49 *</b>	48	17
item25	15	9	12	<b>82 *</b>	38	-6
item26	40	21	17	36	10	16
item27	26	22	13	18	-1	17
item28	23	30	5	35	30	4
item29	8	9	-7	<b>61 *</b>	55	21
item30	19	2	17	<b>85 *</b>	22	-9
item31	18	24	30	22	14	4
item32	29	19	34	28	29	-46
item33	19	17	7	<b>52 *</b>	7	11
item34	28	12	23	<b>45 *</b>	24	71
item35	25	19	25	23	9	-36
item36	36	12	9	36	18	-11
item37	32	21	<b>47 *</b>	20	34	49
item38	33	19	-12	23	39	3
item39	26	19	<b>75 *</b>	9	35	10
item40	28	37	<b>49 *</b>	17	2	9
item41	31	41	<b>61 *</b>	16	37	7
item42	24	22	<b>64 *</b>	24	21	2
item43	22	14	<b>65 *</b>	10	-1	-19
item44	32	29	<b>46 *</b>	20	19	22
item45	37	27	<b>47 *</b>	14	-2	7

## APPENDIX C: Item Text for 4-factor Model

## FACTOR 1: Teacher as reporter of classroom of others

13. I know what happens in other teachers' classrooms.
14. I know the extent to which other teachers use various teaching methods to improve student achievement.
15. I know the extent to which other teachers in this school are continually learning.
16. I have observed how other teachers relate to their students.
17. I know how other teachers deal with difficult students in their classrooms.
18. I know whether other teachers in this school press students to achieve.
19. I have observed other teachers who try to help students who are failing.
22. I know the extent to which teachers exchange educational materials and techniques.
23. I know the extent to which other teachers in this school are applying new teaching techniques

## FACTOR 2: Teacher as reporter of collective responsibility of others in school environment

1. In this school, teachers feel responsible that all students learn.
2. In this school, teachers and administration work together.
3. In this school, teachers hold prominent leadership roles.
5. Teachers in this school adapt their lessons to enable students to learn.
6. The teachers in this school support the school mission.
7. Teachers in this school help each other do their best.
10. In this school, teachers frequently discuss instructional improvement.
11. In this school, teachers participate equally on committees.
12. In this school, teachers are supportive of each other.

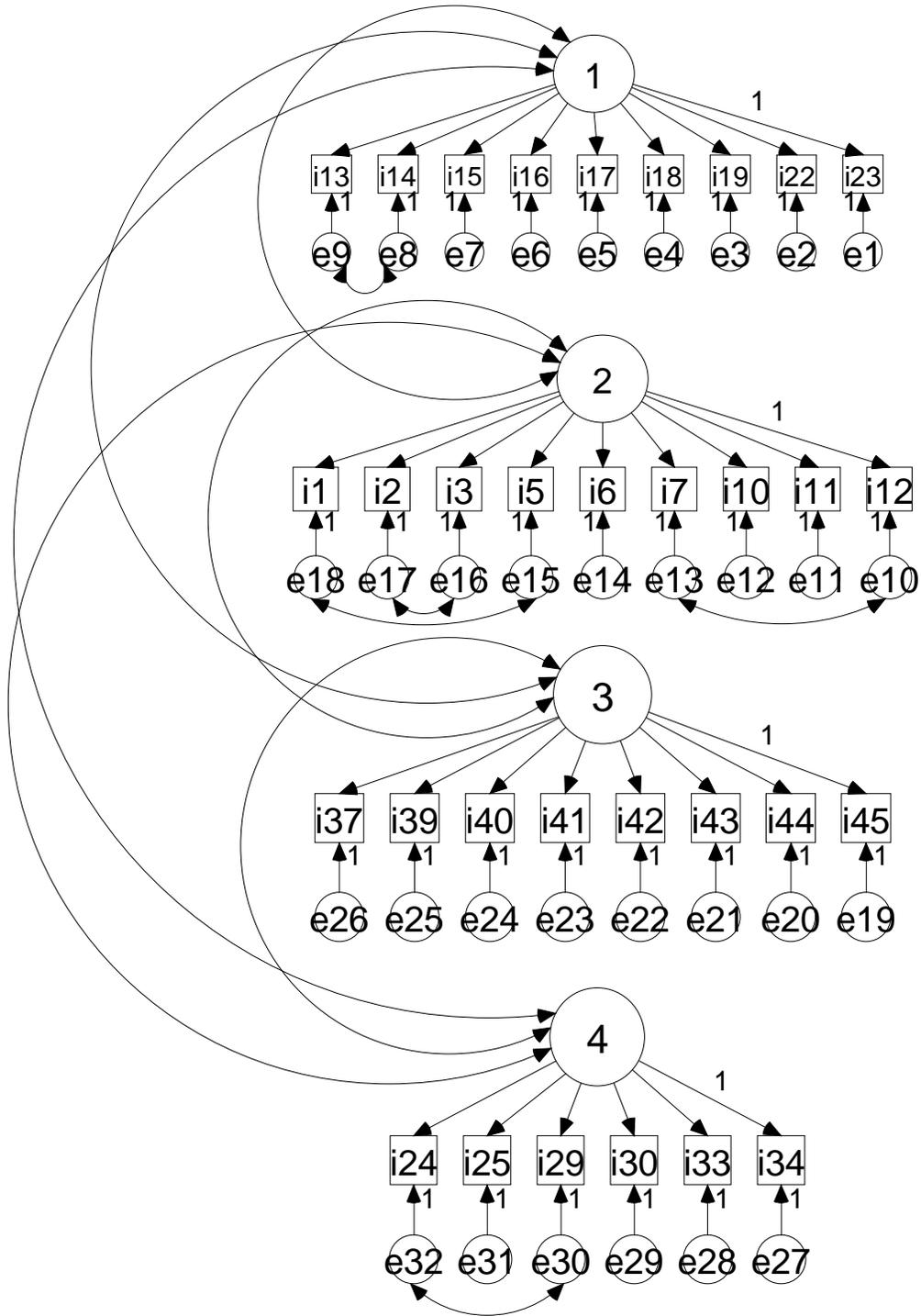
## FACTOR 3: Teacher as identifier of self responsibility to the collective

24. I am responsible for the performance of my students.
25. I know how to teach students with diverse abilities.
29. I am responsible for making sure my class runs smoothly every day.
30. I know how to teach students with diverse backgrounds.
33. I adapt my teaching methods to meet my students' needs.
34. I support the mission of this school.

## FACTOR 4: Teacher as identifier of own collective responsibility with the classroom

37. I work with the staff and administration to solve school-related problems.
39. I talk with other faculty and staff members about instructional issues.
40. I hold the same educational values as other teachers in this school.
41. I work with others to control disruptive behavior.
42. I work with teachers and administrators to keep students in school.
43. I help resolve staff conflicts.
44. I work with other teachers and/or administrators on instructional improvement
45. I am helped by other teachers.

APPENDIX D: Diagram of final 32-item Collective Responsible Instrument



APPENDIX E: Eigenvalues and Scree Plots for Subscale Factors

FACTOR 1

The FACTOR Procedure  
Initial Factor Method: Principal Components

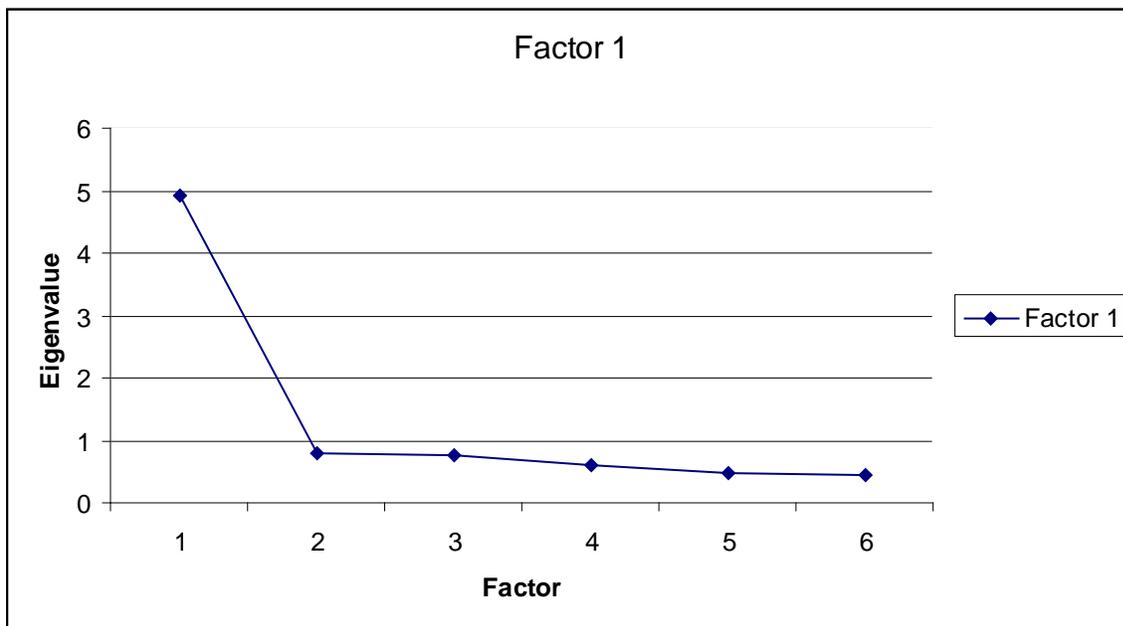
Prior Communality Estimates: ONE

Eigenvalues of the Correlation Matrix: Total = 9 Average = 1

	Eigenvalue	Difference	Proportion	Cumulative
1	4.99337493	4.19612531	0.5548	0.5548
2	0.79724962	0.04667992	0.0886	0.6434
3	0.75056970	0.14907863	0.0834	0.7268
4	0.60149108	0.13942092	0.0668	0.7936
5	0.46207016	0.03100462	0.0513	0.8450
6	0.43106554	0.03042103	0.0479	0.8929

1 factor will be retained by the MINEIGEN criterion.

FACTOR 1



FACTOR 2

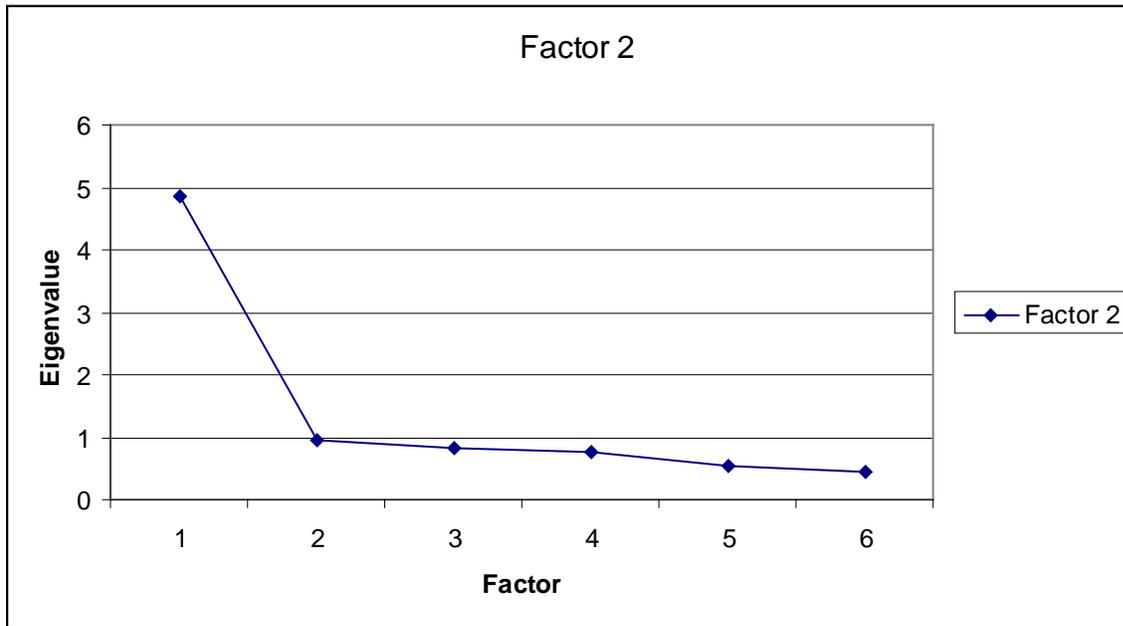
Eigenvalues of the Correlation Matrix

	Eigenvalue	Difference	Proportion	Cumulative
1	4.48660655	3.53539086	0.4985	0.4985

2	0.95121570	0.13243782	0.1057	0.6042
3	0.81877788	0.07126313	0.0910	0.6952
4	0.74751474	0.19748570	0.0831	0.7782
5	0.55002904	0.11466150	0.0611	0.8393
6	0.43536754	0.03617004	0.0484	0.8877

1 factor will be retained by the MINEIGEN criterion.

Scree Plot of Eigenvalues



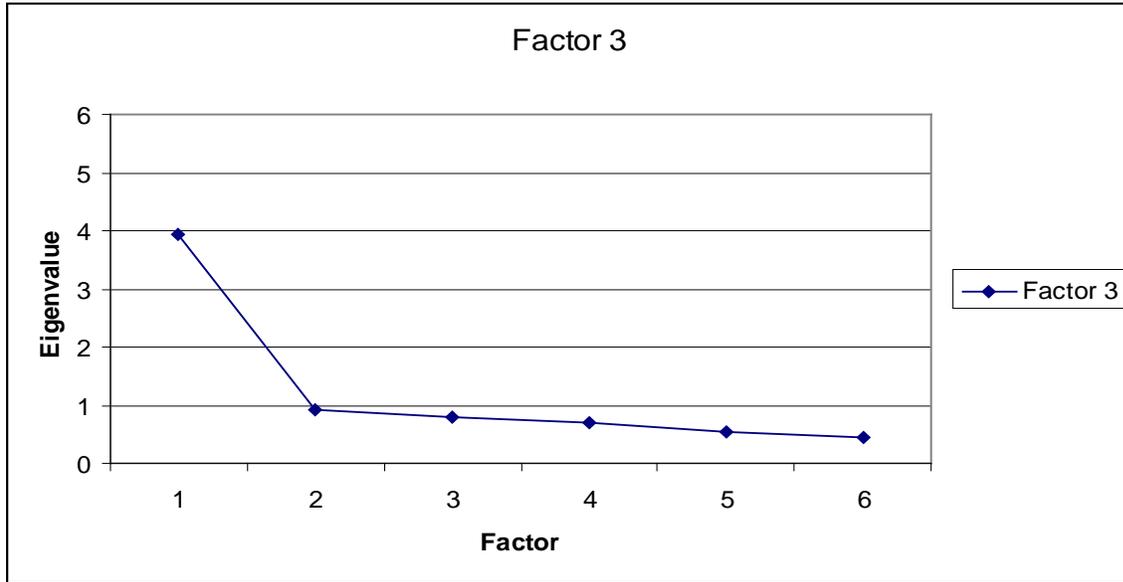
FACTOR 3

Eigenvalues of the Correlation Matrix

	Eigenvalue	Difference	Proportion	Cumulative
1	3.62520783	2.70382795	0.4532	0.4532
2	0.92137988	0.14249067	0.1152	0.5683
3	0.77888921	0.08829901	0.0974	0.6657
4	0.69059020	0.09964447	0.0863	0.7520
5	0.59094573	0.06683280	0.0739	0.8259
6	0.52411293	0.07379309	0.0655	0.8914

1 factor will be retained by the MINEIGEN criterion.

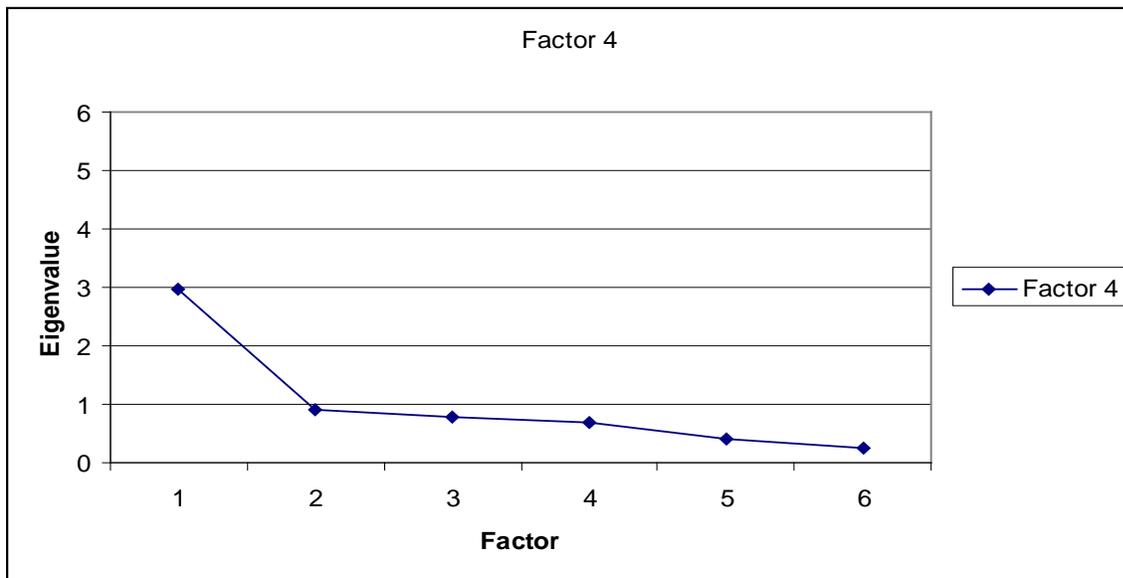
Scree Plot of Eigenvalues



FACTOR 4

Eigenvalues of the Correlation Matrix				
	Eigenvalue	Difference	Proportion	Cumulative
1	2.97920262	2.06041872	0.4965	0.4965
2	0.91878390	0.14756116	0.1531	0.6497
3	0.77122274	0.09730285	0.1285	0.7782
4	0.67391988	0.27405698	0.1123	0.8905
5	0.39986290	0.14285494	0.0666	0.9572
6	0.25700796	0.09527156	0.0428	1.0000

1 factor will be retained by the MINEIGEN criterion.



Obs	ITEM	SAI	Z_SAI	M_LOGIT	F_LOGIT
1	1	-0.02	-0.11233	-0.61	-0.59
2	2	0.00	0.00000	-0.10	-0.10
3	3	0.29	1.76816	0.43	0.14
4	4	-0.08	-0.44932	-0.43	-0.35
5	5	-0.04	-0.22466	-0.35	-0.31
6	6	-0.40	-2.32495	-0.22	0.18
7	7	<b>0.65</b>	3.81693	0.66	0.01
8	8	-0.38	-2.31690	1.03	1.41
9	9	-0.22	-1.27872	-0.10	0.12
10	10	0.21	1.28039	1.46	1.25
11	11	-0.25	-1.52428	1.39	1.64
12	12	-0.10	-0.60971	1.42	1.52
13	13	-0.09	-0.52311	0.03	0.12
14	14	-0.02	-0.12194	0.69	0.71
15	15	-0.07	-0.42680	0.66	0.73
16	16	-0.45	-2.61557	-0.35	0.10
17	17	-0.25	-1.52428	0.66	0.91
18	18	-0.21	-1.28039	1.06	1.27
19	19	-0.11	-0.57264	-1.44	-1.33
20	20	0.25	1.40414	-0.79	-1.04
21	21	0.21	1.01865	-2.09	-2.30
22	22	0.12	0.67399	-0.52	-0.64
23	23	0.32	1.66585	-1.15	-1.47
24	<b>24</b>	<b>0.66</b>	3.57935	-0.70	-1.36
25	25	0.19	1.06715	-0.26	-0.45
26	26	-0.01	-0.05812	0.19	0.20
27	27	-0.02	-0.11625	0.27	0.29
28	28	0.33	1.85346	-0.61	-0.94
29	29	-0.19	-1.06715	-0.52	-0.33
30	30	-0.20	-1.21942	0.95	1.15
31	31	-0.04	-0.22466	-0.39	-0.35
32	32	-0.07	-0.39316	-0.26	-0.19