

***AN EX POST FACTO EXAMINATION
OF RELATIONSHIPS AMONG
THE DEVELOPMENTAL DESIGNS
PROFESSIONAL DEVELOPMENT MODEL/
CLASSROOM MANAGEMENT APPROACH,
SCHOOL LEADERSHIP, CLIMATE, STUDENT
ACHIEVEMENT, ATTENDANCE,
AND BEHAVIOR IN HIGH POVERTY MIDDLE
GRADES SCHOOLS***

David L. Hough
Missouri State University

Vicki L. Schmitt
*University of Alabama and
Rogersville Public Schools*

This study reports finding from an ex post facto causal-comparison study utilizing data from a multifaceted program evaluation of a professional development approach to classroom management known as Developmental Designs 1 and Developmental Designs 2 (DD1 & D2). Data from this program evaluation indicate that teachers implement a number of classroom management strategies at higher levels after participating in sustained professional development for 2 or more years as provided by content experts, that is, facilitators and coaches whenever the school's leadership is perceived as supportive. In addition, levels and degrees of program implementation in middle grades schools were found to be associated with improved school climate and student outcomes, again, with school leadership being a covariate. Attendance, behavior, and academic achievement as measured by state assessments and other adequate yearly progress criteria among high poverty middle grades schools were found to be associated with levels of DD1 and DD2 implementation and supportive school leadership. The model used to support this finding is robust whenever 50% or more teachers in high poverty middle grades schools implement Developmental Designs for 2 or more years.

• **David L. Hough**, Dean Emeritus and Professor, College of Education, Missouri State University, Park Central Office Bldg. #207, Springfield, MO 65897. Telephone: (417) 836-8853. E-mail: DavidHough@missouristate.edu

Middle Grades Research Journal, Volume 6(3), 2011, pp. 163–175
Copyright © 2011 Information Age Publishing, Inc.

ISSN 1937-0814
All rights of reproduction in any form reserved.

BACKGROUND FOR THE STUDY

An initial program evaluation of the Development Designs (DD) approach was conducted to examine relationships among the professional development model used, teacher practice, and student/school outcomes. Of specific interest in this ex post facto study is the degree to which the DD approach impacts school climate and what role school leadership plays in terms of being directly or indirectly associated with student achievement, attendance, and behavior in conjunction with the DD approach. The relationship of effective professional development associated with levels of program implementation and sustainability were also studied. It is hypothesized that the DD approach and professional development model can improve classroom learning environments and overall school climate when DD-trained teachers implement specifically-designed classroom management strategies throughout each school day over a 2-year period of time. The DD approach described throughout this issue has been studied extensively in a variety of ways to determine its impact on school climate, student achievement, attendance, and behavior. In addition the professional development model used to effect the DD approach has been examined to determine the extent to which classroom management approaches are implemented. Again, it is hypothesized that higher levels of implementation will be associated with improved teacher classroom management practices and student outcomes. The research question guiding this inquiry asks, "What is the relationship among levels of DD training, implementation, school climate, leadership, student achievement, attendance, and behavior?"

RELATED LITERATURE

Examining relationships that exist between school climate and school leadership has been a focus of educational theory and research for decades, beginning with Haplin and Croft in

1963, brought to the fore as part of "effective schools" research first initiated in the 1970s, and more recently since enactment of the No Child Left Behind (NCLB) legislation of 2001. One long held belief associated with this field of study is that the climate of a school (to the extent that it can be reliably ascertained) is indelibly linked to improved student outcomes including achievement (Haynes, Emmons, & Ben-Avie, 1997), and that the school's leadership can shape its climate. Researchers also argue that, "educational leadership is possibly the most important single determinant of an effective learning environment" (Kelley, Thornton, & Daugherty, 2005). Using data associated with their meta-analysis of 70 studies spanning more than 3 decades of education research addressing this topic, Walters, Marzano, and McNulty (2005), derived a framework known as "balanced leadership" which characterizes school leaders as change agents who are able to promote a positive school climate while effectively implementing necessary changes. However, other variables that mediate relationships between school leadership and overall school climate continue to confound researchers. If responsibilities and practices often associated with "balanced leadership" are related to student outcomes (Walters et al., 2005), one could reasonably assume that the school principal may be the single the most important component of positive climate and, thus, school reform. Studies suggest that effective school principals may be able to promote and foster positive school climates that, in turn, can create the types of learning environments that will produce positive student outcomes such as higher levels of academic achievement, better attendance rates, and fewer incidents of inappropriate behavior.

Associated with this body of knowledge is an established subspecialty area of study in which researchers describe a variety of competing leadership approaches or "styles." Hersey and Blanchard (1988), for example, describe four types of leadership styles from what they have labeled a situational leadership model: autocratic, in which the leader tells oth-

ers what to do; democratic, described as “selling” others on a course of action; encouraging and social, characterized by leaders that actively participate alongside subordinates; and laissez-faire, as the name suggests, a hands-off approach in which most all tasks are delegated to others. The theory suggests that situational leaders size up any given situation and then invoke the approach best designed to effect the desired outcome. A host of other leadership approaches and “styles” can be found in the literature that purport to describe effective leadership traits associated with attaining positive outcomes under certain conditions. In addition, organizational management and leadership traits common in the educational setting have been identified, beginning most notably with Bolman and Deal (1984) who theorized that managers must exhibit “brilliant flashes of vision and commitment” and that such traits are characteristic of prudent leadership. Undergirding most of this broad and expansive study of leadership is the assumption that leaders can directly impact organizational, that is, school, climate as well as student outcomes. Just as common is the belief that school principals, per se, who are able to lead and implement reform efforts can cause student academic achievement to improve and remain at high levels over time.

What the literature lacks is an exhaustive examination of perceived effective principal leadership traits conceptualized as a construct (not any one particular “style” or approach) and the relationship effective leadership has to another construct, that is, school climate and the various student outcomes affected by same. As Griffith (1999) states, “Despite conceptual linkages among school leadership, school climate, and broader organizational characteristics, together called organizational configuration, few studies have empirically examined their interrelations in one study” (p. 271). In addition, much of the extant research addresses differences in cohort groups’ perceptions of leadership traits and/or school climate characteristics. While differences in group perceptions are important, it is also of

value to determine whether or not perceptions are able to produce valid, reliable measures of the vary constructs they purport to examine.

While the study of school climate may have begun almost a half century ago with Haplin and Croft (1963) commonly cited as pioneers in the field, perhaps the beginning of substantive, findings that described characteristics of effective principals can be found in the so-called “effective schools” studies. Most research generally identify a safe and orderly learning environment, high academic expectations for students, frequent monitoring of students progress, routines, instructional leadership and a shared common mission as key components. One might contend that such traits, or variances of them, are also indicative of positive school climates. Renewed interest in both school climate and effective leadership has escalated since the mid 1990s. School climate has been examined and redefined more recently by researchers who have found that school environments are influenced by a combination of many factors, including but not limited to a number of long-held beliefs associated with effective leadership traits. Interactions between adults and students are impacted by leadership and climate (Kuperminc, Leadbeater, & Blatt, 2001), and both of these unique, yet related, constructs are associated with academic achievement (Johnson & Johnson, 1993); feelings of safety, mediated by school size (Frieberg, 1998); mutual trust and respect among teachers and students (Manning & Saddleire, 1996); and perceptions of the school environment (Johnson, Johnson, & Zimmerman, 1996), for example. Regardless of definition, school climate is generally defined as a measure of positive school characteristics deemed desirable, and it is most often assessed by surveying some combination of teachers, students, parents, principals and/or other stakeholders. While the principal may set the tone for the school, there are other variables that must also be examined when determining relationships among school leadership, school climate, and student outcomes.

The literature is replete with education theory associated with potential linkages between school climate and a number of different outcomes. Virtually all of these theories are grounded in research, and most all identify individually selected variables believed to be associated with climate that are correlated to an outcome of study. Bulach, Malone, and Castleman (1995) report a correlation between given climate indicators and student achievement. More recently, conceptualizing school climate as a construct that can be measured rather than as a sub group of individually selected theorized items, has allowed researchers to more clearly bring the construct into focus. Thanks to recent sophisticated approaches involving psychometric and outcome analyses, it is possible to study school climate as either a school-level phenomenon / property (known to organizational theorists as a “unit of theory,” or as an individual-level opinion peculiar to each person’s perspective. Each competing theory has merit and both have been examined by psychometricians who report different findings supporting views derived from different sets of data. In sum, researchers who have studied organizational climate as an individual-level opinion examine the extent to which different climate variables affect different personalities. The school-level unit of theory tends to support the notion that climate exists in and of itself and therefore affects all persons in some type of similar fashion. When this view is studied, classical measurement models are used to examine variances between individual responses. Thus, interrater reliability is assessed and highly reliable measures can be constructed. Another approach is to use confirmatory factor analytic techniques. Currently, multilevel analyses such and hierarchical linear modeling (HLM) are gaining favor when both individual and group data produce nested designs. Researchers no longer rely on school level data to make assumptions regarding school climate and often utilize hierarchical linear modeling for examining directional relationships among school climate and student achievement.

When examining perceptions of leadership and school climate, it is important to disaggregate data by subgroup, that is, teachers, students, and parents. Researchers often report high positive leadership/climate correlations between and among the subgroups. Generally, teachers who rate their school high in climate tend to teach students who also view the climate as high, and have parents who do likewise. Even so, some differences among these groups have been found to exist (Nusser & Haller, 1995). In an effort to better understand the level of school climate within and across a school, district, or region, it is often advantageous to examine differences in the way in which a particular group or subgroup perceives school climate as a single construct. These subgroups can be identified within the school community as noted above, or they can be studied across different schools—whether part of the same district or across different districts and/or geographical regions. Data collected from a variety of stakeholders can then be compared to provide a more comprehensive understanding. Differences among teachers’, parents’, and students’ views of a school can be vital components comprising an overall framework from which the study of school climate can take place. Studies that include data collected from all of these sources have the potential to provide either a comprehensive view or competing views of the way in which perceived climate impacts a variety of student outcomes. In addition, groups and/or subgroups can be isolated to examine specific questions related to school climate and its relationship to leadership and student outcomes. One group that has shown over time to produce consistently reliable measures of school climate is teachers; hence, studying teachers’ perceptions in relationship to student outcome variables is a prudent approach, as well.

While elements that constitute the leadership and overall climate of a school are complex, and while research continues to address the impact school leadership has on a variety of outcomes, much attention has been given to student achievement as the outcome of most

interest, perhaps due to the annual yearly progress (AYP) provision in No Child Left Behind. In a review of the literature, Bulach et al. (1995) cite 17 references which support the hypothesis that school climate is related to student achievement. Their findings support the notion that there are “significant differences in student achievement between schools with good school climate and those with a poor school climate” (Bulach & Berry, 2001, p. 1). Others studies support this perceived directional relationship that may indicate a positive school climate directly contributes to higher academic achievement (e.g., Erpelding, 1999; Hirase, 2000).

Overall, research tends to support the argument that effective school leadership and positive school climate both impact children’s cognitive, social and psychological development, noting that the climate of the school is a crucial factor in promoting student success. “Students achieve academically and develop well in school communities in which collaborative interpersonal relations ensure the successful implementation of policies and programs that focus on the students’ academic and social growth” (Haynes et al., 1997, p. 322). Given the ever-expanding and developing age of school accountability, measuring leadership and climate as well as determining the relationship one has to the other and their individual and/or combined impact on student outcomes continues to be of concern and interest to decision makers and others concerned with helping to support school success. Therefore, understanding the complex relationships among these variables is important when developing a framework for school success.

METHODOLOGY

Data Sources

Data from DD program attendance records, web-based school demographic and descriptive data, survey questionnaires, state data files, and school report cards were used to select an intentional sample consisting of 30

high poverty middle grades schools with teachers who had completed DD training. School-level demographic and descriptive data were collected from school, district, and state web sites and school report cards.

Data were extracted from a subset of middle grades schools that had participated in one or more program evaluation data collection methods. A brief review of those methods is provided as follows:

1. Data from 241 schools with teachers trained in the DD approach across 25 states were examined to determine which could be labeled as “high poverty,” that is, including 50% or more students receiving free or reduced lunches. In addition, school report card data had to be available on school web sites or from state data files. Data from these schools ($n = 9$) were collected for the 2008-2009 academic school year.
2. Schools whose teachers had participated in DD professional development workshops during the summer 2008 at multiple locations across the United States were examined. In all, 662 educators completed 1-week DD1 workshops, and 238 educators completed DD2 workshops, for a total of 900 educators. A survey questionnaire was developed by the evaluation team to determine levels of knowledge, experience, and confidence participants had with regard to the various classroom management strategies addressed during the summer workshops. The questionnaire was formatted for use and administration at three different times: (1) on the first day of the institute as a preinstitute questionnaire, (2) on the last day of the institute as a postinstitute questionnaire, and (3) in February 2009, as a follow-up institute questionnaire. The follow-up instrument included an additional set of items that asked participants to provide information regarding their actual level of use (after 6 months’ classroom teaching) of each DD strategy addressed during the

- summer institute. Seven high poverty schools with accessible report card data were chosen for inclusion in this study from this group.
3. A subset of six schools whose teachers had been implementing *DD* for more than 1 year were asked to complete implementation questionnaires and school climate questionnaires. Both questionnaires were administered online, and a “cohort study” of the relationship between *DD* implementation, school climate, and student outcomes was conducted.
 4. Eight additional schools that met high poverty and availability of report card data requirements were added from another set of 22 middle schools from a large, Midwestern school district. This district was the subject of a large-scale evaluation of *DD* implementation, school leadership, climate, achievement, attendance, and behavior during the 2009-2010 academic school year.

Procedures

All data for the 30 middle grades schools studied in 9 different school districts across five different states were entered into SPSS 17.0 for statistical analyses. These data included teacher completed *DD* implementation and school climate questionnaires, school report card information, and demographics for Grades 6, 7, and 8. Data obtained were from the following academic school years: 2007-2008, 2008-2009, and 2009-2010.

DD implementation and school climate questionnaires were completed by 641 teachers from 21 of the 30 schools included in the study. Nine schools had no implementation data but had school climate data in the form of questionnaires that had been administered either by the school or state as a part of required accreditation processes. Because the school climate index used to obtain measures of school climate among *DD* program evaluation schools differs from school or state instruments, questions were “matched” across

instruments and reviewed for content and construct validity. Reliability measures were obtained via factor analytic techniques. This latter concern is of interest for the purposes of the ex post facto study presented here because it is important to establish the extent to which teacher responses regarding *DD* implementation and school climate can reliably produce measures of both school climate and effective leadership before relationships to one another and to student academic achievement, attendance, and behavior can be made. Therefore, the most reliable measures of school climate and effective leadership, that is, teacher responses, were used for the current analyses. These measures were then used to examine relationships and interrelationships to student outcomes identified above.

Principal axis factoring techniques utilizing varimax rotation were applied to teacher questionnaire data. Estimates produced from this confirmatory factor analysis procedure yielded high reliability for both leadership and climate ($\alpha = .94$, $\alpha = .91$, respectively). The resulting factors were then used to examine relationships among leadership and climate, as well as each taken independently and then together to examine their relationship to student achievement, attendance and behavior. School grade-level data were aggregated and used to examine all schools collectively, not as separate grade-level cohorts.

Leadership and climate factor scores were calculated for each school and then used as independent variables that were included in multilevel regression analyses to determine their relationship to the dependent variables: student academic achievement, attendance, and behavior. Both leadership and climate factors were used separately as independent variables, as well, in further analyses. Dependent variables were school level outcome data including achievement, attendance, and behavior that were collected via the state’s data systems and school report cards. Achievement is a marker of the percent of students scoring at one of the two highest levels, labeled as variously, such as, “proficient” or “advanced,” on

the state assessments, attendance is measured by end of year average daily attendance reports, and behavior is quantified as the number of “referrals” reported by schools to their state department of education and documented on individual school report cards. Bivariate correlations were then calculated among these student outcome variables and leadership and climate factors. Multivariate analysis of covariance was also used to examine further the relationships among leadership, climate, and student outcomes. School size (defined as the average daily attendance [ADA]) and socioeconomic status [SES] defined as the percent of children receiving free or reduced lunches) were used as covariates in this analysis.

RESULTS

The School Climate and Leadership Index developed via confirmatory factor analysis procedures applied to the educator data aggregated across Grades 6, 7, and 8 among all schools resulted in two conceptually sound scales. “*Leadership*” is comprised of 15 items and “*climate*” is comprised of 12 items. Each scale was found to be highly reliable, yielding coefficient alphas of .967 and .931 respectively (see Figure 1.) As expected, the correlation between leadership and climate is high ($r = .53$; $p < .01$) accounting for nearly 50% percent of the variance between the two, and when taken together account for 44% of the variance within the School Climate and Leadership Index. As mentioned previously, other surveys were the subject of prior examination, and although somewhat less reliable measures, they also produced similar results as the teacher data with some negatively skewed differences detailed in prior research reports.

Some statistically significant differences were found among the schools. Some significant variance in demographic and student outcome data exist among the 30 schools studied, indicating that, while constituting somewhat different environments, the schools tend to be producing some outcomes that are associated

with DD implementation (discussed later), climate, and leadership. As such, this makes the schools an excellent laboratory for the study of leadership and climate and their relationship to one another and to school demographics, as well as student outcome measures.

Data analyzed as part of this study indicate that both measures of climate and leadership as perceived by teachers across the 30 schools are indirectly related to both average daily attendance and the number of discipline referrals reported within the school setting. These relationships are supported theoretically in the research literature. Using average daily attendance as the marker, data indicate that the greater the number of students attending any given school, the less positive the teacher perceptions of school leadership and school climate, more so for the latter in particular. In addition, as the perceptions of effective positive school climate decrease, the number of discipline incidents increases significantly. However, while positive correlations exist, data do not support a statistically significant direct relationship between school leadership or climate to student achievement as measured by the percent of students scoring at the two highest levels on state assessments. Again, while positive relationships may be important, they were not found to be significant for the schools examined (Table 1 contains these data.).

As shown in Figure 2, the linear relationship between school leadership and climate is positive. However, to determine the relative strength of this relationship and its impact on student outcomes, a more robust examination using multiple analysis of covariance techniques were employed. Data from these analyses indicate that the percent of students achieving at the highest levels on their state communication arts assessments were those attending schools with more positive climate mean factor scores ($p < .05$), as perceived by teachers. Interestingly, no significant relationships were found between leadership and the student outcomes examined herein. For academic achievement, per communication arts

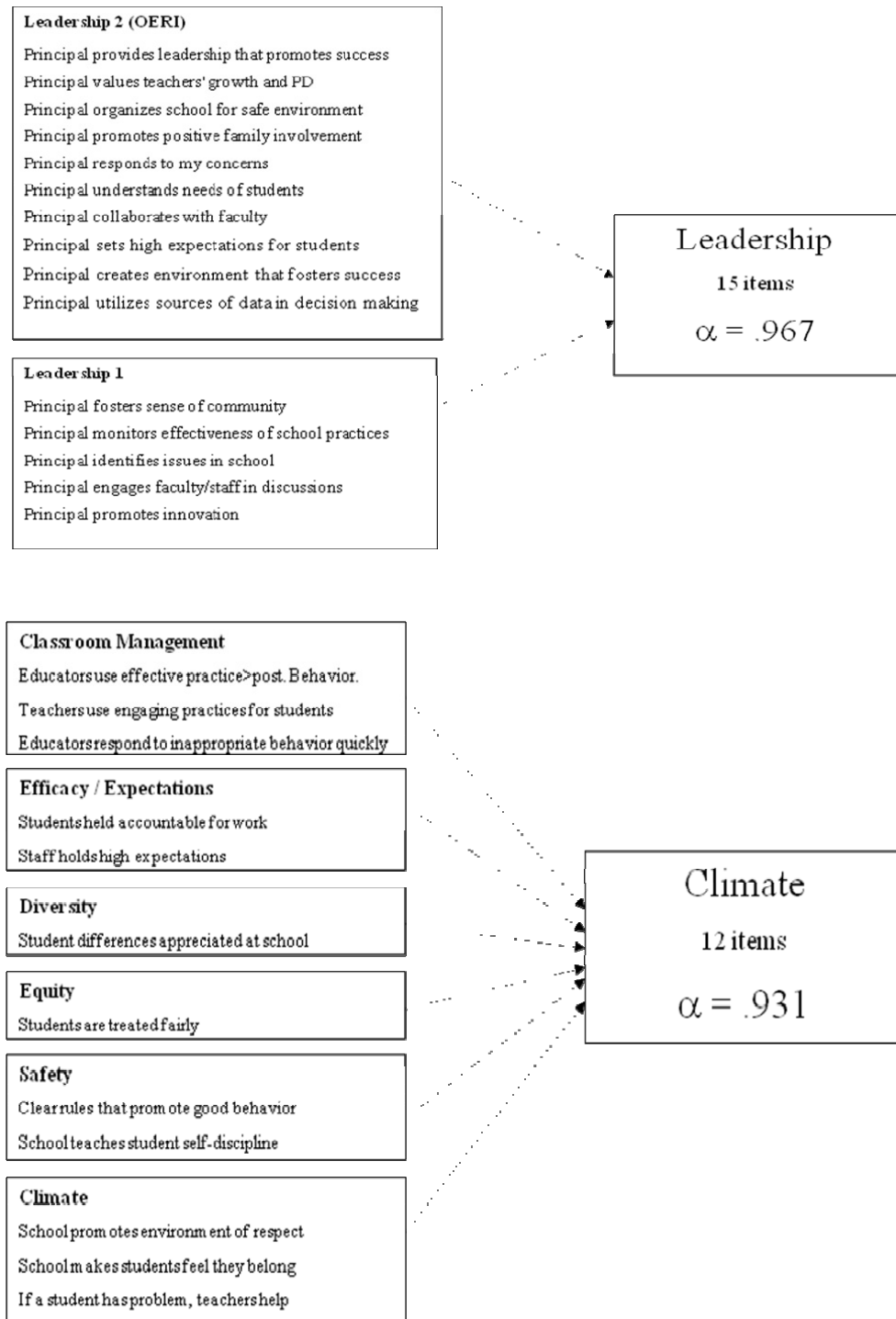


FIGURE 1
 School Climate and Leadership Factors

TABLE 1
Correlations Among DD Implementation, Leadership,
and Climate to Student Attendance, Behavior, and Achievement

	<i>ADA</i>	<i>Behavior</i>	<i>Achievement</i>
Leadership	-0.310*	-0.078	0.219
Climate	-0.510**	-0.423**	0.091
DD implementation	.624**	-.391**	.145*

Note: * $p < .05$. ** $p < .01$.

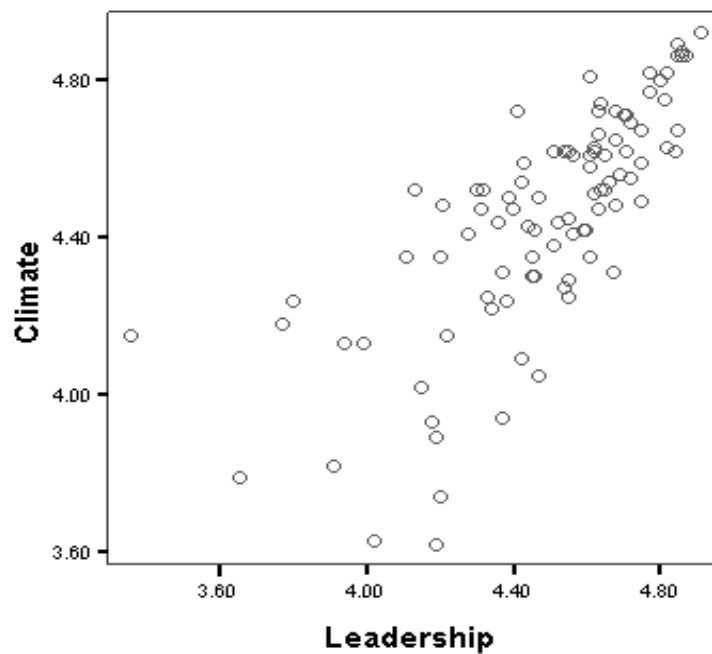


FIGURE 2
The Relationship Between Leadership
and Climate: Scatterplot From Regression Analysis

scores on the state assessment, the partial ϵ^2 statistic use to calculate an effect size was .096. However, school climate was found to have a marginally significant relationship to behavior ($p = .0475$) with an effect size of .13 and academic achievement ($p = .0491$) with an effect size of .17, again with both effect sizes determined via partial ϵ^2 statistics. While both effect sizes are low, school size and SES were added into the equation as covariates, and these relationships yielded similar, marginally-

significant results, with school size being more strongly related (negatively) to climate and student outcomes than was SES. Again, because there is relatively little variance in terms of demographics across the schools and because the school was the unit of analysis, one should not be overly surprised by these findings. The more intriguing phenomenon is the strong correlation between leadership and climate that does not produce similarly strong relationships when compared separately to stu-

dent academic achievement, attendance, and behavior.

To address the research question pertaining to the relationship between levels of DD training and implementation to student achievement, multiple regression techniques were applied to archival school-level data from the 2007-2008, 2008-2009, and 2009-2010 academic school years in addition to additional data collected during the 2008-2009 academic school year. Discriminate analysis was also used to describe groups of schools and predict whether or not they would meet AYP. Based on the total number of educators trained in DD over the time period studied across the 30 schools included, the relationship between level of training and implementation was found to be highly correlated Pearson $r = .61$ ($p < .05$). When examined along with school size, percent of students receiving free or reduced lunches, and percent minority students, level of participation in DD accounted for 15% of the variance relative to whether or not a school met AYP during the 2008-2009 or 2009-2010 academic school years. Canonical discriminate functions accurately predicted 77% of the schools that met AYP when 50% or more of the teachers had completed both DD1 and DD2 and had implemented these strategies for 2 or more years, and had a high level of confidence for using five or more of the strategies learned during their institute training.

Prior research addressed a question regarding the most effective DD professional development components as measured by changes in teacher perceptions and practices using repeated measures analysis of variance to examine mean differences in schools with DD-trained teachers across three questionnaire administration time frames: pre- / post- / follow-up. Repeated measures ANOVA results found significant differences between groups in terms of duration of implementation $F(1, 2308) = 13.74, p < .05$; content expertise of the professional developer $F(2, 311) = 11.49, p < .05$; level of school "buy-in" $F(1, 2299) = 9.88, p = .032$; alignment to school goals $F(1, 2310) = 9.72, p = .033$; application to current classroom

needs $F(1, 2314) = 8.91, p = .041$; and teacher experience/congruity with practice $F(1, 2312) = 7.94, p = .044$.

Another research question examined by prior research focused on the relationship among DD professional development and classroom management approaches to student behavior, attendance, and achievement. One-way ANOVA techniques were used to examine differences among a sample of six different schools to determine if differences exist when compared to one another and the sample in terms of behavior, attendance, and achievement. This analysis confirmed previous findings that schools with 50% or more of their teachers trained in DD2 that had been implementing the strategies for more than two years differed, albeit not statistically significant, in the number of behavior referrals, attendance rates, or students scoring at one of the two highest levels on state assessments. This findings lends credence to the assumption that a sustained character education professional development model implemented schoolwide over time can produce positive student outcomes, including but not limited to higher academic achievement, regardless of SES, percent of students on free or reduced lunch, school size, or grade configuration.

LIMITATIONS

Intentional sample selection used to effect this ex post facto study negates true randomization and no control group was used, making generalizations to other high poverty middle grades schools inappropriate. Even attempts herein to use a causal-comparative approach to program evaluation resulted in findings that are more descriptive than prescriptive. In addition, the complexities of MANCOVA techniques across six variables leads to conclusions that should more adequately be explored with additional techniques. Existing data limitations not only dictate the types of analyses that can be used, but they do not permit the type of statistical procedures necessary to address certain

research questions in the most robust manner possible. Therefore, caution should be taken when interpreting data such that findings are supported both in theory and in practice. Finally, because of some data inconsistencies in terms of the unit of analysis made possible, from student level to school level, as well as within the instruments used to collect climate and leadership data themselves, had to be addressed both conceptually and statistically, further study is required before any conclusions drawn here can be considered empirical in nature.

Significance of the Ex Post Facto Study

While previous scholarship regarding theorized components of effective professional development based in large part on conventional wisdom may hold many truths, this study supports recent research focused on leadership, climate, and student outcomes. When the DD approach is operational it can impact teaching and learning in positive ways. Data indicate that when 50% or more of teachers in any of the high poverty middle grades schools studied implement the DD approach at a high level for 2 or more years, school climate tends to improve, along with student attendance and achievement with fewer behavior referrals. This finding is most robust whenever the school's leadership is perceived by teachers as being supportive of the DD approach.

Previous research indicates that other factors such as school size, SES, and percent of minority students account for much of the variance in many educational initiatives. Findings from this study do not confirm those assertions, albeit that was not an area of study herein, given that all schools examined were considered high poverty sites. For example, since research indicates that school climate and student performance are positively related, we would expect larger schools (with lower climate scores) to have poorer student performance.

The relationships among school leadership, climate, DD implementation and the student

outcomes studied here, that is, student behavior, attendance, and achievement are of importance to educators, policymakers, and researchers. Mediating effects of school size, SES, percent of students classified as minorities, et al. variables were found to be of less importance when studying these relationships. This dispels beliefs that minority children living in poverty and attending large schools cannot become successful. Implementing school-supported, teacher-implemented DD classroom management strategies at high levels over an extended period of time, holds promise in high poverty middle grades schools.

Schools should be encouraged to sustain their focused DD implementation for a minimum of 2 years and implement strategies at the highest levels with support from the school leadership. Policymakers should develop incentives for teachers to accomplish both of these goals related to involvement and implementation. Researchers should continue to study the validity and reliability of school climate and leadership measures and their relationships to classroom management approaches. In sum, high poverty middle grades schools should have reason to develop more optimistic and realistic views for achieving school success as measured by AYP criteria through renewed classroom management strategies such as the Developmental Designs approach and professional development model.

Policy Implications and Recommendations

Measuring school leadership and climate in efforts to determine their relationship to one another as well as to student outcomes enables decision makers to understand better how to prepare, nurture, and support school communities as well as prepare principals for their roles as instructional leaders. Schools are encouraged to assess both leadership and climate continually, perhaps annually, so they can continuously monitor both constructs and examine trends. School communities should

also develop adequate understandings of the relationship between leadership and climate in order to facilitate better the work of schools and districts in their efforts to develop and implement professional development programs designed to address, whole school reform initiatives. Focusing solely on leadership traits may not produce desired outcomes in terms of improved student academic achievement and may contribute very little to improved attendance and/or behavior. School improvement plans designed to improve student academic achievement, attendance, and behavior should include strategies aimed at creating the most positive school climate possible with the principal and other school leaders as active participants and, perhaps, change agents. While school principals may become expert in modeling and promoting optimal climates associated with positive student outcomes, all members of the school community must be involved in the creation and maintenance of positive school climates.

Even though teachers' perceptions of school leadership and climate constitute the most reliable measures of both constructs, prior examination of students' and parents' views help to further understand complex leadership and climate constructs and may facilitate efforts to operationalize school improvement initiatives that involve the entire school community. Studies that include such data will better assist school leaders and their constituencies as, together, they strive to meet AYP requirements as mandated by the No Child Left Behind legislation. Better understanding of the ways in which leadership and climate factors interact to impact a variety of student outcomes may enable stakeholders to participate more fully in efforts to make positive contributions to student learning as well as other desirable outcomes.

Relationships among school leadership, climate, student achievement, attendance, and behavior may be met with mediating effects by other variables such as school size, but clearly a school's climate is more directly and independently related to higher student academic

achievement, better attendance, and fewer behavior referrals than is school leadership when the latter is viewed alone as a single construct. Perhaps additional variables should be identified and examined empirically in future research to determine how it is that while leadership and climate are related, only climate is found to impact student outcomes in statistically significant ways. While some relationships may be intuitive, it is important to note that the "direction" of the relationships should be the focus of subsequent research. Future research should include examination of whether it is effective school leadership that creates a positive school climate or whether it is positive school climates that contributes to positive perceptions of the school's leadership. Moreover, further study is needed to definitively document the interaction between leadership and climate that may contribute to desirable student outcomes such as higher student achievement, attendance and behavior.

Again, it could be argued that higher student achievement, attendance and behavior contribute to more positive perceptions of school leadership and/or climate just as it could be argued that leadership and climate dictate achievement levels, attendance rates, and appropriate student behavior. Either way, prudent decision makers will focus attention on all these dimensions. At this point in the debate, it is reasonable to assume that because school leadership and climate can be impacted directly by educators and others, it should be addressed by schools and examined to determine their direct and indirect effects on improving student outcomes such as achievement, attendance and behavior. Schools and school districts are encouraged to focus their whole school reform initiatives, professional development activities, and principal preparation on strategies to help understand and create positive school climates. Efforts should focus on factors such as these over which organizations have most influence. Schools are encouraged to develop policies and concentrate programs in areas that can lead to improved learning environments associated with positive

student outcomes. These constructs can be examined, discussed, and addressed by school communities seeking to nurture effective school leadership, climate, and student outcomes, thus enabling schools to determine where the greatest amount of human and fiscal resources might be directed to produce the most desirable outcomes.

REFERENCES

- Bolman, L. G., Deal, T. E. (1984). *Modern approaches to understanding and managing organizations*. San Francisco, CA: Jossey-Bass.
- Bulach, C. R., & Berry, J. (2001, November). *The impact of demographic factors on school culture and climate*. Paper presented at the Southern Regional Council of Educational Administrators, Jacksonville, FL.
- Bulach, C. R., Malone, B., & Castleman, C. (1995). An investigation of variables related to student achievement. *Midwestern Educational Researcher*, 8(2), 3-9.
- Erpeling, C. J. (1999). School vision teacher autonomy, school climate, and student achievement in elementary schools. *Dissertation Abstracts International*, 61(2), 1405. (Publication Number ATT 9930316)
- Frieberg, H. J. (1998). Measuring school climate: Let me count the ways. *Educational Leadership*, 65(1), 22-26.
- Griffith, J. (1999). The school leadership/school climate relations: Identification of school configurations associated with principal change. *Education Administration Quarterly*, 35(2), 267-291.
- Haplin, A. W., & Croft, D. (1963). *The organization of climate in schools*. Chicago, IL: Midwest Administration Center, University of Chicago.
- Haynes, N. M., Emmons, C., & Ben-Avie, M. (1997). School climate as a factor in adjustment and achievement. *Journal of Educational and Psychological Consultation*, 8(3), 321-29.
- Hersey, P., & Blanchard, K. (1988). *Management of organizational behavior: Utilizing human resources* (5th ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Hirase, S. K. (2000). School climate. *Dissertation Abstracts International*, 61(2), 439. (Publication Number ATT 9963110)
- Johnson, W. L., & Johnson, M. (1993). Validity of the quality of school life scale: A primary and second-order factor analysis. *Educational & Psychological Measurement*, 53(1), 145-53.
- Johnson, W. L., Johnson, M., & Zimmerman, K. (1996). Assessing school climate priorities: A Texas study. *The Clearing House*, 70(2), 64-66.
- Kelly, R. C., Thornton, B., & Daugherty, R. (2005). Relationships between measures of leadership and school climate. *Education*, 126(1), 17-25.
- Kuperminc, G. P., Leadbeater, B. J., & Blatt, S. J. (2001). School social climate and individual differences in vulnerability to psychopathology among middle school students. *Journal of School Psychology*, 36(2), 141-159.
- Manning, M. L., & Saddlemire, R. (1996). Developing a sense of community in secondary schools. *NASSP Bulletin*, 80(584), 41-48.
- Nusser, J. L., & Haller, E. J. (1995, April). *Alternative perceptions of a school's climate: Do principals, students, and teachers agree?* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Walters, T., Marzano, R. J., & McNulty, B. (2005). *Balanced leadership: What 30 years of research tells us about the effect of leadership on student achievement* (Working paper). Aurora, CO: Mid-Continent Regional Education Laboratory.