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Tribal vs. Public Schools: Perceived Discrimination and School Adjustment among Indigenous Children from Early to Mid-Adolescence*

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Abstract

The purpose of this study is to assess the differential effects of perceived discrimination by type of school on positive school adjustment among Indigenous children during late elementary and early middle school years. The analysis utilizes a sample of 654 Indigenous children from four reservations in the Northern Midwest and four Canadian First Nation reserves. Multiple group linear growth modeling within a structural equation framework is employed to investigate the moderating effects of school type on the relationship between discrimination and positive school adjustment. Results show that students in all school types score relatively high on positive school adjustment at time one (ages 10-12). However, in contrast to students in tribal schools for whom positive school adjustment remains stable, those attending public schools and those moving between school types show a decline in school adjustment over time. Furthermore, the negative effects of discrimination on positive school adjustment are greater for those attending public schools and those moving between schools. Possible reasons for this finding and potential explanations for why tribal schools may provide protection from the negative effects of discrimination are discussed.

Keywords

Indigenous education; school adjustment; school type; discrimination

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Research has shown that although Indigenous children have average to superior academic achievement in elementary school, many fall behind their non-Indigenous peers by high school entry (Hornett, 1990, for a review). These changes in average academic performance occur between elementary and junior high school (Barber & Olsen, 2004; Zanobini & Usai, 2002), which points to the middle school years as a crucial developmental period for the educational careers of Indigenous youth. Between 25% and 30% of Indigenous adolescents in the United States do not finish high school (DeVoe & Darling-Churchill, 2008; Census, 2000), compared to 19.6% for the general population (Census, 2000, Figure 4), and this gap is even greater (33.1%) for those who live on reservation lands (Census, 2000, Figure 13). In Canada, Indigenous youth are significantly less likely to finish high school than non-Indigenous youth (Canadian Council on Learning, 2005) and Indigenous young people are 2.5 times more likely to drop out of school than non-Indigenous youth (Canadian Council on Learning, 2008). With dropout rates approaching 35% in some Indigenous communities and with prior research indicating that negative school adjustment and attitudes towards school lead to school dropout for all ethnic groups (Bachman, 1991), understanding which factors contribute to school adjustment among Indigenous students is critical.

Positive emotional connections to school, which can influence educational behaviors and competencies (Pianta & Steinberg, 1992), may be indicative of protective processes that help keep youth in school. Understanding school attachment development over time is complicated, however, because many Indigenous students experience discrimination both in educational and community settings. Prior research shows that discrimination negatively influences academic performance, self-esteem (Bowker, 1992; Ledlow, 1992; LaFromboise, Hoyt, Oliver, & Whitbeck, 2006; Sanders, 1987; Whitbeck, Hoyt, Stubben, & LaFromboise, 2001), stress reactivity (Jones, Harrell, Morris-Prather, Thomas, & Omowale, 1996) and distress (Kessler, Michelson, & Williams, 1999). Thus, discrimination may provide yet another barrier to school adjustment, especially in environments where Indigenous culture is not valued. Because school performance among Indigenous youth is positively influenced by local knowledge, language, and culture (Demmert, 2001), the effects of discrimination may be stronger in off reservation public schools where less cultural support is provided within schools and by educators. Tribal schools are more likely than public schools to incorporate culture into the curriculum and institutional guidelines and so may be more protective factors than public and other off-reservation schools

The purpose of this study is to assess the differential effects of perceived discrimination by type of school on positive school adjustment among Indigenous children during late elementary and early middle school years. We investigate the relationship between discrimination and positive school adjustment by school type controlling for individual background factors using a multiple group latent growth model. Because school adjustment influences a wide range of academic outcomes such as engagement, achievement, graduation, and college matriculation, understanding the links between structured educational environments, discrimination, and adjustment is of substantial theoretical, empirical, and practical significance.

Review of the Literature

Our discussion of the literature review is oriented around the following topics: 1) *The importance of educational environments* in which we focus on the differences in school adjustment and academic performance among school types (i.e. tribal schools vs. public schools) due to community and cultural continuity in institutions. 2) In *the effects of discrimination* section we discuss how individuals respond to discrimination in educational environments, focusing on stress, anger, and withdrawal responses. 3) *The general risk factors affecting school performance* section describes the common threads previous research has uncovered regarding predictors of academic adjustment among Indigenous students.

The importance of educational environments

There are substantial differences in educational performance and patterns of enculturation among Indigenous students attending different school types. Tribal schools provide more protective factors for students (Wall & Madak, 1991; Zimmerman, Ramirez-Valles, Washienko, Waiter, & Dyer, 1996) and may also have more resources to "meet the cultural and educational needs of Indigenous children" (Machamer & Gruber, 1998, 358). Research has also shown that many students who perform well in reservation elementary schools later perform poorly in mainstream secondary schools (Wilson, 1992).

Tribal schools tend to emphasize traditional language in classes and throughout the school such as in names for classrooms and subjects. Many schools also incorporate traditional ceremonies into daily or weekly curriculum and engage elders in story-telling while teaching language classes, history, and traditional activities. The staff and administration working in predominately Indigenous institutions are apt to be more sensitive and attuned to Indigenous cultural issues, programming materials, and relevant activities (Lysne & Levy, 1997). Lysne and Levy (1997) argue that this contributes to more significant and repeated opportunities for students to explore their Indigenous identity. Furthermore, Grantham-Campbell (1998) argues that Indigenous teachers are more concerned with cultural and community issues, as well as how these may affect subsequent academic achievement and performance. Additionally, schools located within reservation boundaries may also be used for community cultural activities (Lysne & Levy, 1997), thus strengthening the student-school bond. Students in tribal schools are largely protected from discrimination from majority society. These structural features of the schools Indigenous youth attend are likely to lead to different school adjustments over time.

Although tribal and reservation schools have been shown to contribute to academic success and positive identity, most Indigenous students attend public schools. Grantham-Campbell (1998) argues that the relationship between non-reservation schools and Indigenous cultures must be scrutinized in coming years as more Indigenous children are enrolling in public schools. Of the 624,000 American Indian/Alaska Native students in the U.S. (Freeman & Fox, 2005), approximately 48,000 students attend Bureau of Indian Affairs funded schools (U.S. Department of the Interior, 2006).

The effects of discrimination

There is evidence that Indigenous students attending predominately white high schools after previously attending reservation schools encounter more racial prejudice, isolation, and lower expectations than those who continuously attend reservation schools (Wilson, 1992; 18 of the 23 students in the study left school). Within-school discrimination negatively influences Indigenous youth's academic performance and self-esteem (Bowker, 1992; Ledlow, 1992; Sanders, 1987) while, more generally, perceived discrimination has been shown to influence physical reactivity (Jones et al., 1996) and psychological distress (Kessler, Michelson, & Williams, 1999). Thus, discrimination is likely to directly affect school adjustment while, indirectly, attending schools in communities where discrimination is high may result in increased reactivity to stressful educational situations (e.g. testing, bullying) and higher levels of psychological distress in school settings in general. This may be especially true in non-Tribal schools where the cultural values of Indigenous students are not understood or respected.

Early adolescence is the time when ethnic identities are formed (Phinney, 1990; 1992). During adolescence, youth become aware of the social structure in which they live and their place in it (Levine, 1967). These perceptions shape educational achievement and motivation and may be affected by levels of community discrimination. Students who are told that the social structure provides little opportunity for advancement may place less importance on higher education. Deyhle (1992) argues that cultural and structural factors affecting Indigenous youth leaving school include the "racial and economic relations in the community and school" and "cultural integrity and resistance" (24).

Williams-Morris (1996) points out that adolescents often respond to discrimination by withdrawing (internalizing) and/or expressing anger (externalizing). One form of extreme withdrawal is school dropout. Additionally, externalizing behaviors may cause problems in school settings, ultimately leading to school suspension or expulsion. Levels of discrimination and its effects are likely to differ by location and school type and the coping mechanisms may differ significantly for those in tribal schools compared to those in public schools. As more Indigenous students move into public education settings, the effects of discrimination will be an important link in understanding educational outcomes like school adjustment which are likely to mediate a broad range of educational outcomes.

General risk factors affecting school performance

Research on gender in Indigenous educational outcomes has been unclear. Some research points to higher Indigenous female dropout rates compared to Indigenous males (Gade, Hurlburt, & Fuqua, 1992), while other work reports no such gender difference (Eberhard, 1989). Older Indigenous students were less confident that their teachers liked them and more likely to get upset in school than non-Indigenous students (Barnes & Volcano, 1982). Financial strain can also impact school success. Living in poverty exacerbates normal life stresses that negatively impact school performance, ultimately leading to school dropout (Ekstrom, Goertz, Pollack, & Rock, 1987). Research examining differences and similarities between Indigenous and non-Indigenous youth has shown that Indigenous students' academic success is much more sensitive to parents' socioeconomic status (SES) than for

non-Indigenous youth (Hull, 1990). There are few studies that focus on the influence of family structure and Indigenous academic performance, although there may be a trend for students who stay in school to have two-parent families (Eberhard, 1989).

Prior research has been inconsistent in regarding the effects of background characteristics on school adjustment for Indigenous students. This may, in part, be due to differing school settings in terms of cultural support and levels of perceived discrimination. The research reported here fills a gap in the current literature on Indigenous education by modeling differences in individuals school adjustment trajectories by school type, while assessing the impact of perceived discrimination, grade, location, financial strain and family structure.

Theory and Hypotheses

Theoretically, we argue that a culturally "safe" environment results in less distress and a more positive school adjustment for Indigenous children. Our previous work has shown that the degree to which children are grounded in their traditional culture is positively associated with academic success even when controlling for positive parenting, involvement in school activities such as sports and clubs, and the child's self-esteem (Whitbeck, et al., 2001). This research expands these findings to school settings and posits that over time the culturally homogenous environment provided by tribal schools reduces negative effects of discrimination and enhances the positive effects of traditional culture resulting in better school adjustment for students in tribal schools.

There is a tendency for school adjustment to decline between elementary and junior high school (Barber & Olsen, 2004; Zanobini & Usai, 2002). This general trend may be exacerbated for Indigenous children who are exposed to social contexts where their culture is largely ignored and where they are exposed to discrimination (Deyhle, 1989; 1992). Thus, our analysis is organized around the following central hypotheses:

a. The effect of discrimination exposure on school adjustment will vary by school type;

b. Students who attend public schools off the reservation will experience the highest levels of discrimination, and the negative effect on school adjustment will be strongest for these students;

c. Students in tribal schools will experience the least discrimination, and the effect of discrimination on school adjustment will be weakest for these students.

Our analyses also will take into account potential effects of gender, age, family structure, grade, and SES. For example, there is evidence that over time, girls will have better school adjustment than boys (Gade, Hurlburt, & Faqua, 1992; Hurlburt, Kroeker, & Gade, 1991), and that children in higher grades (Sealey, 1980), those who experience financial hardship (Eckstrom et al., 1987), and those in single female caretaker homes (Eberhard, 1989) will have lower levels of school adjustment.

Method

Sample

The data used in this study are part of a longitudinal lagged sequential study currently underway on four Indigenous reservations in the Northern Midwest and four Canadian First Nation reserves. Several of the reserves were classified as remote in that they are considerable distances from even small towns and are accessed by non-paved roads, by boat, over ice in winter, or by airplane. The reserves and reservations included in this sample share a common cultural tradition and language with minor regional variations in dialects. The sample is representative of one the most populous Indigenous cultures in the U.S. and Canada. The long range purpose of the longitudinal study is to identify culturally specific resilience and risk factors that affect children's well-being and to then use the information to guide the development of culturally-based interventions.

The project was designed in partnership with the participating reservations and reserves. Prior to the application's funding, the research team was invited to work on these reservations/reserves and tribal resolutions were obtained. As part of our agreement to work together, the researchers promised that participating reservations/reserves would be kept confidential in published reports. On each participating reservation/reserve, an advisory board was appointed by the tribal council. The advisory boards were responsible for advice on handling difficult personnel problems, advising on questionnaire development, reading reports for respectful writing, and assuring that published reports protected the identity of the respondents and the culture. Upon advisory board approval of the questionnaires, the study procedures and questionnaires were submitted for review by the university Institutional Review Board for approval.

All participating staff on the reservations were approved by the advisory board and are either tribal members or, in a few cases, non-tribal members who are spouses of tribal members. To ensure quality of data collection, all the interviewers underwent special training for conducting computer-assisted personal interviewing and administering paper and pencil questionnaires. The training included practice interviews and feedback sessions regarding interview quality. In addition, all of the interviewers completed a required human subject's protection training that emphasized the importance of confidentiality and taught procedures to maintain the confidentiality of data.

At the beginning of the project, each tribe provided us with a list of families of enrolled children aged 10-12 years who lived on or proximate to (within 50 miles) the reservation or reserve. We attempted to contact all families with a child within the specified age range. Families were recruited with a personal visit by an Indigenous interviewer at which time the project was explained to them. They were then presented with a traditional gift and invited to participate. If they agreed to be interviewed, each family member received $40 for their time when the interviews were completed. Study adolescents and at least one of their adult caretakers are interviewed once annually for the longitudinal project design.

Interviews for Wave 1 began in the year 2002 and continued through 2003, with follow-up interviews completed annually. At Wave 1, the majority (97%) of the 746 youths

interviewed were 10-12 years old; however, because of recruitment errors and birthdays between recruitment and interview dates, a small number of youth were aged 9 or 13 at Wave 1. The overall response rate for all sites at baseline was 79.4%. Subsequent retention rates were 95% for Wave 2 and 93% for Wave 3 of data collection.

This study includes three waves (1-3; *n*=654) of data from of the project youth who attended tribal schools, public on-reservation schools, or public off-reservation schools. The sample was limited to students with at least two waves of consistent data on the school type variable to be included in the analysis (see the Analytic Plan section below). Twenty-four cases did not have two waves of school data from the selected school types. Analyses showed that these 24 students were more likely to be female. We found no other significant differences on our wave 1 characteristics.

The decision to use these three different school structures (tribal schools, public on reservation schools, and public off reservation schools) was due to statistical power. For example, fewer than 15 students attended private schools either on or off the reservation in any one wave and many of these students moved into differing school types, greatly complicating parameter estimation and making statistical comparisons impossible. Due to our theoretical interest in location, we only included school types in which we could differentiate between on and off-reservation schools. In order to assess school level factors specifically, approximately 92 cases that did not meet our requirements were excluded.

Measures

Endogenous Variable—*Positive School Adjustment* is a seven-item summed scale assessing general attitudes towards school. Alphas ranged from .72 to .76 across all three waves. Items assessed if students liked school, did well in school, tried hard at school, felt grades were important, got along with teachers, did well in hard subjects, and felt teachers saw them as good students. Variables were coded such that a higher score indicates more positive adjustment.

Grouping Variable—*School Type* is a nominal variable created from four dichotomous variables (0,1) assessing if youth attended a tribal school, public on-reservation school, public off-reservation school or moved between these school types. Youth were included in the analyses if they attended any specific school type (tribal, public on-reservation, or public off-reservation) for at least two waves. The final variable was coded 1 for tribal schools, 2 for public on reservation schools, 3 for public off reservations schools, and 4 for children who moved in between these three different school types.

Time-Varying Covariates—*Adolescent Perceived Discrimination* is a nine item mean scale assessing perceived discrimination in the community and school at each wave. Items included whether students had been insulted, disrespected, ignored, threatened, or treated different by police, school staff, community members, and peers. Alphas ranged from .79 to .81 at all three waves. Variables were recoded so a higher score indicates more discrimination. The final scale was centered around the school type mean.

Time Invariant Covariates—*Financial Strain* is a mean scale created by standardizing the responses to six items with slightly different response categories. These items elicited opinions about being able to afford things such as clothing, food, medical care, as well as how difficult paying bills was for the respondent in the past year (Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1992). The final scale was centered around the school type mean to create a meaningful 0. *Female* is a dichotomous variable indicating if the child is male (0) or female (1). *Single Female Home* is a dummy variable for living in a single-female guardian household and is used as our measure of household structure. A score of 1 indicates that the youth lived in a family with a female caretaker only and a score of 0 indicates any other type of family structure. *Grade* is a continuous variable which denotes what grade the child was in at the time of the first interview. In order to create a meaningful intercept, we recoded the variable so the mode value, 5th grade, was equal to zero.

Analytic Plan

In order to assess both time invariant and time varying relationships across time, we utilized a multiple group residual growth model (Bollen & Curran, 2006; see also Fan 2001), which is depicted for the entire model in Figure 1. Following normal conventions (e.g., Bollen 1989), arrows indicate relationships between variables, boxes capture observed variables, and circles represent latent variables. Our dependent variable was positive school adjustment over three waves and the variation across this observed measure is used to define the model (the latent variables). The growth part of the model is captured by the arrows linking the latent factor *i*, average school adjustment at the first observation, and *s*, the temporal slope which reports subsequent change in school adjustment, and the observed indicators for school adjustment. This part of the model defines a latent factor where all the factor loadings (arrowed lines) have a loading of 1 for *i* and loadings of 0,1,2 for *s*. The curved arrow between the intercept (*i*) and slope (*s*) indicates that initial school adjustment and changes in adjustment are correlated.

We controlled for four time-invariant variables (gender, family financial strain, parental structure, and grade in school) denoted in Figure 1 as X_{s1}. The arrows from the box to the circles indicate that these observed measures predict initial status (*i*) and the slope or rate of change (*s*). We include one time-varying covariate, perceived discrimination (denoted as $X_{k1} - X_{k3}$ in Figure 1), which directly affects levels of school adjustment at each wave, controlling for each individuals growth process. This time-varying variable reflects the fact that exposure to discrimination can both change over time and have contemporaneous effects on school adjustment. Finally, the multigroup part of the model is reflected by the *G* in Figure 1 which brackets the model, indicating that the previously discussed model parameters are allowed to *differ* by school type (G). Our grouping variable consisted of four different "school types" including students who have attended tribal schools (Tribal), those who have attended public on-reservation schools (Public On), those in public off-reservations schools (Public Off) and those students who have changed schools (Moved). Students were included in the analyses if they attended one of the four school types in at least two waves. Our goal was to specify a model that included time varying information, systematic growth, individual variability in growth as a function of time invariant factors, and the influence of school type on positive school adjustment.

Before assessing the effects of perceived discrimination and school type on positive school adjustment across time, it was important that we establish the latent growth curve of positive school adjustment over the three time points independently of other effects. Thus, we first analyzed the unconditional latent growth model without predictors to establish model validity. The unconditional latent growth model assumes repeated measurements of school adjustment and i (the intercept or initial status) and s (the slope or rate of change). Next, we estimated unconditional multigroup growth models which incorporate G in Figure 1 so that the growth parameters were allowed to vary by school type. Finally, the direct effects in Figure 1 capturing changes in the growth parameters by the observed covariates and the time varying influence of discrimination are incorporated into the model.[1]

Results

Sample descriptive by school type are provide in Table 1. Students were on average 11 years old and in 5th grade at the time of the baseline interview. School types varied slightly in gender ratios, but on average about half of the students in each school type were female, with the exception of public off reservation schools which had a higher proportion of male students (56% male). Students on average reported a financial strain score of ranging from 1.23 - 1.34, where a higher score indicates more financial strain.

To assess our hypotheses pertaining to positive school adjustment change over time we first observed mean levels of positive school adjustment at the univariate level. Table 1 shows substantial variation over time and across schools on the main variables of interest. All students have high reported levels of school adjustment early on. Although initial levels of positive school adjustment and discrimination across school types were very close, one can see a shift over time. Students in tribal schools remained fairly stable on school adjustment across observations while students in other school types show a decrease in school adjustment.

Table 2 shows our unconditional latent growth model. The significantly negative slope coefficient (s in the discussion above) shows that positive school adjustment decreases over time ($b = -.31$, p .001) and the initial status of school adjustment ($b = 5.98$, p   .001) is consistent with the descriptive statistics reported in Table 1 where positive school adjustment at wave 1 ranged from 5.88 to 6.02 depending on school type.

After fitting the initial unconditional linear growth model we fit a multigroup latent growth curve model to assess if the growth of positive school adjustment across time differed by school type. Table 3 shows the unstandardized results of our multiple group unconditional latent growth curve analysis. Results indicate that school adjustment levels decrease over time (s in Figure 1) for public on-reservation schools ($b = -.38$, p .001), public off-reservation schools ($b = -.24$, p .001), and in situations where adolescents changed school types ($b = -.27$, p .01). Notably, tribal schools did not show the same pattern of negative

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[1]Missing data was handled in M*Plus* using Full-Information Maximum Likelihood (FIML) to stabilize our variance-covariance structure across patterns of missing data (Muthen & Muthen, 2009). We ran identical models on a complete dataset using listwise deletion and found similar results to those reported. The results from the listwise-deletion model showed small variations in the level of significance for the growth rate among the school moving group and the coefficient for discrimination became significant for these students.

growth. In fact, they showed no growth ($b = -.03$, p = .80) and change in school adjustment was not significant across time. This is important because youth in these schools report relatively high levels of school adjustment at wave 1.

Figure 2 graphically depicts the change in positive school adjustment over time for each school type. Students in all schools start at similar points (answering approximately 6 out of 7 questions positively) but school adjustment declines over time for students who attend public schools and move.

After establishing variation in average growth across school types, our goal was to study variation in initial and changing levels of school adjustment by background demographic factors and discrimination while assessing whether these associations differ by school type. Table 4 presents the final unstandardized results for our multiple group conditional latent growth analysis. Results indicate that some of the demographic variables influenced initial levels of school adjustment and the rate of change in school adjustment over time and these effects varied by school type.

None of the demographic variables predicted initial status for students in tribal schools. For public on-reservation schools, students in higher grades had lower initial school adjustment ($b = -.28$, p .001) than those in lower grades, and females had higher initial adjustment than males ($b = .28$, p .05). Females, however, declined more quickly regarding positive school adjustment than males across time ($b = -.23$, p .05). Older students also were more likely to have lower initial positive school adjustment than younger students in public schools off the reservation ($b = -.35$, p .001). No other demographic variable affected slope or initial status for this school type. Among students who had moved between school types, experiencing financial strain significantly influenced initial status ($b = -.69$, p .01).

The multiple group linear growth model presented above also assessed whether perceived discrimination differentially affected positive school adjustment by school type net of the demographic variables and the natural processes of decline. For students attending tribal schools the relationship between discrimination and positive school adjustment across time was non-significant. Students in public schools off the reservation manifested the strongest association between discrimination and positive school adjustment across time ($b = -.77$, p .01). Students in public on-reservation schools and those students who reported moving also had similar patterns between discrimination and positive school adjustment ($b = -.64$, p .01; $b = -.41$; respectively).

Discrimination eroded school adjustment for all of the students but those in attending tribal schools.

Discussion

Far too many Indigenous students in secondary schools leave school early. The effects of school leaving reverberate through the entire life course and approximately one-third of Indigenous adolescents living on reservation lands leave school before graduating (Census, 2000; Figure 13). Among high school dropouts almost 30% of American Indian/Alaska natives aged 16 and older are unemployed in the United States. On average, the median

annual earnings for full-year, full-time employees 25 to 34 years old who had not completed high school was $8,000 dollars less than that of the general U.S. population (DeVoe & Darling-Churchill, 2008). In Canada, Indigenous workers without a high school diploma are 3.5 times more likely to be unemployed than those with a bachelors degree and median earnings are $5,000 higher annually for full-time workers aged 25 and older with a high school diploma as compared to those without (Statistics Canada, 2008). We have attempted to shed light on a small part of the problem of high school dropout by longitudinally studying school adjustment among Indigenous youth. This particular outcome was motivated by the concern that youth with poor school attachments are more inclined to leave school early and that, moreover, school adjustment is itself responsive to a variety of theoretically and substantively important factors such as the type of school the youth attends and the experience of discrimination.

Our results provide evidence that school adjustment changes across time for Indigenous children and that these changes vary by school setting. Students in on- or off-reservation public schools and students who moved between school types were more likely to have decreasing school adjustment over time than children in tribal schools even though students attending different school types entered the study with similar adjustment levels. Importantly, the children attending tribal schools showed no change in positive school adjustment with age, which means that their reported adjustment levels remained high. Typically, as students move beyond elementary school attachment declines (Barber & Olsen, 2004; Barnes & Volcano, 1982; Hornett, 1990; Zanobini & Usai, 2002). Thus, tribal schools were shown to be protective for Indigenous students in that school adjustment remained stable and high over the course of the study.

Our findings are also consistent with previous research stating that tribal schools promote resilience, possibly through cultural continuity and support (Grantham-Campbell, 1998; Lysne & Levy, 1997; Wall & Madak, 1991). Students in public on-reservation and public off-reservation schools declined in school adjustment over time and this relationship was intensified by greater negative to perceived discrimination. Students who changed school types also saw a significant decline in school adjustment, although the effect of discrimination was not a significant factor in school adjustment for these students, which may indicate that youth who spent time in tribal schools were less effected by discrimination or that there was less time for them to be negatively influenced by discriminatory experiences.

Family and individual factors interacted with the effects of type of school the children attend. For example, the impact of grade on initial school adjustment was only significant for students attending public schools (either on- or off-reservation) and the impact of financial strain on positive school adjustment was only significant for students who moved between school types. Furthermore, female adolescents in public schools on the reservation experienced sharper declines in positive school adjustment across time than those in other schools. Older children in tribal schools reported less positive school adjustment.

Education for Indigenous students has historically been a "subtractive" process (Grantham-Campbell, 1998, 386) in that Indigenous students have been forced to sacrifice their cultural

practices, language, and identities to succeed in mainstream education. Research has routinely shown that Indigenous cultural values often directly conflict with European American values such as competition, focusing on the individual rather than the community, and putting oneself forward (LaFromboise, Coleman, & Gerton, 1993). In fact, one of the most frequently hypothesized reasons for the high rates of Indigenous dropout is cultural conflict at school (Colodarci, 1983; Sanders, 1987). Tribal schools may protect students through cultural programming and a teaching environment that allows Indigenous students to comfortably achieve within their cultural context (LaFromboise, Hoyt, Oliver, & Whitbeck, 2006; Nel, 1993).

Policy makers and educators may use these results to advocate for more cultural content in schools with Indigenous children and to seek ways to accord Indigenous culture the respect it deserves in the classroom and in course content. Tribal schools may provide a model for off reservation and on reservation public schools in this regard. Second, our results point to the importance of a safe school environment for Indigenous children to thrive. Perceived discrimination is an important correlate of school adjustment. But creating a truly safe educational milieu means more than merely discouraging discriminatory behaviors among teachers, staff, and students. Rather an atmosphere of true cultural respect should be created where the Indigenous students feel proud and secure in their cultural identity. Such an atmosphere makes those who discriminate or bully the outliers. Again, public schools could learn from their tribal counterparts about ways to create a safe, respectful atmosphere for all their students. Program sharing or partnerships may be the place to begin.

Limitations

Although these findings have important implications for improving school environments for Indigenous children, there are several limitations that should be acknowledged. First, school adjustment was highly skewed and normative truncation approaches within the latent growth framework were not applicable due to the multiple group technique we utilized. Given that our measure had ceiling effects, it is likely that the reported decreases over time in school attachment have been underestimated. Second, not all school situations are accounted for in our current model. Because of low numbers, students attending private schools, alternative schools, home schools or any combination thereof were excluded from analyses. Only students attending tribal schools, public on-reservation schools, or public off-reservation schools were included in analyses. .

Only 50 students remained in tribal schools for at least two waves compared to 353 students who remained in public on-reservation schools and the majority of students attending tribal schools resided on Canadian First Nations. Small group membership, such as those found in tribal schools, may introduce power issues. However, substantively, the effects for important coefficients such as those for the rate of change and discrimination were much smaller than the coefficients for the other groups, which bolsters our interpretations. Statistical power is an important issue because of the small sample size for the tribal schools. This small sample size increases risk for Type II errors (failure to reject the null hypothesis when it is false) and imposes practical limitations on the flexibility of the model. Nevertheless, the results

presented are informative and point to the need for additional longitudinal research with larger tribal school samples.

Third, future analyses should account for systematic school differences, which may also be due to developmental growth. For example, as students move from elementary to middle schools, a change from tribal school to public on- or off-reservation schools may be the only option. Future research needs to deal with developmental trajectories of school moving which may be confounded in the current model. Fourth, our data did not provide reliable measures of academic achievement. Our inability to assess how academic achievement and school adjustment function together in the educational environment is an important limitation to our study. With increased mandates on achievement, such as NLCB, adjustment is only a piece of the puzzle. Future analyses should assess the relationship between achievement and adjustment. Lastly, we state that students who change schools have lower school adjustment. This relationship is complicated and may be reciprocal in nature. It is likely that for some students, changing schools is a response to already low school adjustment. Future analyses should concentrate on understanding the process of school moving as it is related to both overall achievement and adjustment.

Conclusions

Although these findings point to the positive supportive cultural environments of tribal schools, they should not be misconstrued as a condemnation of public school education for Indigenous children. Rather, they indicate that there is much that public school administrators serving Indigenous children could learn from their tribal school counterparts to increase academic success. First, becoming aware of conflicting cultural values that will manifest themselves in classroom behaviors and interactions is crucial. Communal educational exercises, discussions that take into account a cultural reticence to put oneself forward or argue (e.g. a talking circle technique where everyone gets a turn), values of mutual respect, and sharing, and most of all respectful cultural content (and a lot of it) will make the academic experience more comfortable for Indigenous children. Second, reducing experiences of discrimination from teachers, staff, and fellow students is critical to the academic comfort of Indigenous students, especially for those who are moving from the relative comfort of tribal schools where they have been the majority to becoming a small minority in the public school system. There should be real consequences for discrimination and an acceptable, safe process for reporting it. Third, training and recruiting Indigenous teachers and staff is critical so that the students feel there are supportive adults in roles of authority and who understand and respect their culture. Fourth, using cultural experts such as elders to teach and model cultural knowledge, language, beliefs, and practices. Perhaps, most important in this regard is that Indigenous history is not that of majority American history. This should be acknowledged and cultural history should be taught honestly.

Obviously, the public school system cannot be replaced by tribal schools. However, it is apparent from these findings that the tribal school context is protective and school administrators who are sincere about retaining and nurturing Indigenous students could learn from tribal school administrators. Perhaps, shared programming between public schools and tribal schools for Indigenous students would be beneficial.

It is time to get serious about school environments particularly in rural school districts that serve Indigenous children. We need meaningful conversations between public school officials and reservation school officials about what works. The evidence continues to grow regarding the negative effects of discrimination and the positive effects of a safe environment for Indigenous children. However, we need a better understanding of the specific mechanisms that reduce cultural conflict and augment a sense of safety and engagement. For example, what is it about tribal schools that promote positive school adjustment? Future research should focus on these factors to see the extent they could be replicated in other educational settings that serve Indigenous students. For example, how may the successes of tribal schools inform us about the kinds of cultural content that promote academic achievement, what teaching styles are most conducive to Indigenous learning, and what sorts of academic exercises and activities promote school attachment and engagement? These findings suggest that the place to begin to seek answers about academic success is from inside the culture.

Appendix A

Table 5 describes the fit index values for all of our growth models. The comparative fit index (CFI) is a sample-size adjusted measure of fit (Bentler, 1990). Values higher than 0.90 indicate acceptable model fit (Kline, 1998). The Tucker-Lewis index (TLI) is a comparative measure of fit compares the hypothesized model to one with no variance-covariance structure (Tucker & Lewis, 1973). TLI values above 0.90 are also considered acceptable fit (Bentler & Bonnett, 1980; Hu & Bentler, 1999). The root mean square error of approximation (RMSEA) is a measure of the closeness of fit, with values up to 0.08 indicating reasonable model fit, although a value of 0.05 or below is preferred (Browne & Cudeck, 1993; Hu & Bentler, 1999). Lastly, values for the standardized root mean square residual (SRMR) should fall below 0.08 for acceptable fit (Hu & Bentler, 1999).

Table 5

Fit Assessment for Latent Growth Curve Models

	CFI	TLI	RMSEA	SRMR	CHI-SQ	DF	P-Value
Unconditional LGC Model	1.00	1.02	.00	.00	.10	1	.75
Uncondtional Mulitpile Group LGC Model	.98	.97	.06	.06	12.3	8	.14
Conditional Multiple Group LGC Model	1.00	1.02	.00	.04	53.01	56	.59

Researchers conventionally use a comparison among a subset of fit indices such as the CFI, TLI, RMSEA, and SRMR, to provide a base for model selection and/or development. Although some of the measures of fit are not as high as we would have liked, all the fit indices fall within the designated range of appropriate fit for the social sciences. Therefore, we conclude that our models are acceptably identified and statistically reliable.

Biography

Devan M. Crawford, M.A. is the Director of Data Analysis for a longitudinal diagnostic study of American Indian children aged 10-12 years at the University of Nebraska-Lincoln. She graduated from the University of Nebraska-Lincoln in 2006 with her Master's degree in Sociology. She has recently worked on multiple projects assessing risk for school dropout among both homeless and American Indian adolescents.

Jacob E. Cheadle, Ph.D. is an assistant professor of Sociology at the University of Nebraska-Lincoln, prior to which he was a Robert Wood Johnson Health Policy Research Scholar at the University of Michigan. His research interests include childhood health, education, and family processes, along with social network and statistical methodologies.

Les B. Whitbeck, Ph.D. is the John G. Bruhn Professor of Sociology at the University of Nebraska-Lincoln. He graduated with his Ph.D. in sociology from Washington State University in 1986. He is principal investigator for the Midwest Longitudinal Study of Homeless Adolescents and is currently developing a program of research that focuses on homeless women and children. He is also principal investigator for a longitudinal diagnostic study of American Indian children aged 10-12 years. The project will follow the children and their caretakers as the children move through their high school years.

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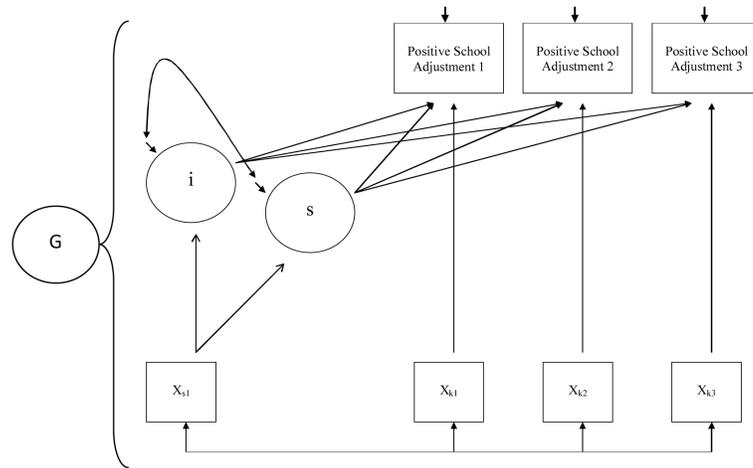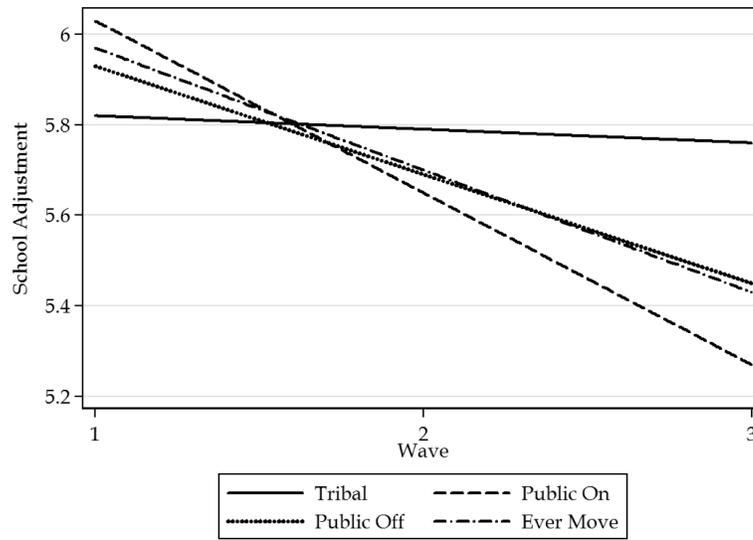
Figure 1. Graphic Depiction of Growth Model
NOTE:

G (school type: 1=tribal, 2=public on, 3 = public off, 4 = ever move)

X_{s1} (gender, financial strain, single female family, grade)

X_{k1} (perceived discrimination) Wave 1

X_{k2} (perceived discrimination) Wave 2

X_{k3} (perceived discrimination) Wave 3

Figure 2.
Change in positive school adjustment by school type

Table 1

Means and Standard Deviations by School Type

	Tribal (n=50)	Public On (n=353)	Public Off (n=143)	Moved (n=108)
Wave 1 Controls				
Grade	5.31 (1.21)	5.37 (1.00)	5.54 (.99)	5.41 (.97)
Female	0.51 (.51)	0.49 (.50)	0.44 (.5)	0.51 (.5)
Single Mother Household	0.16 (.37)	0.20 (.40)	0.33 (.47)	0.26 (.44)
Financial Strain	1.34 (.50)	1.25 (.60)	1.23 (.66)	1.33 (.57)
Time-Varying Variables				
Positive School Adjustment W1	5.88 (1.54)	6.02 (1.4)	5.93 (1.41)	5.99 (1.48)
Positive School Adjustment W2	5.66 (1.62)	5.67 (1.63)	5.68 (1.73)	5.55 (1.78)
Positive School Adjustment W3	5.82 (1.51)	5.27 (1.82)	5.47 (1.76)	5.46 (1.7)
Discrimination W1	0.28 (.33)	0.23 (.28)	0.23 (.28)	0.24 (.31)
Discrimination W2	0.14 (.23)	0.17 (.25)	0.18 (.26)	0.22 (.36)
Discrimination W3	0.16 (.32)	0.15 (.21)	0.20 (.28)	0.23 (.29)

[*] NOTE: n's may vary slightly due to item-nonresponse. The means and standard deviations presented here are before mean centering.

Table 2

Unconditional Linear Growth Model (n = 654)

	Est	**SE**
Slope with Intercept	−.02	.12
Intercept	**5.98** ***	.05
Slope	**−.31** ***	.04
Variance OF		
Intercept	**.95** ***	.20
Slope	**.24** *	.11

[†]p .10

[*]p .05

[**]p .01

[***]p .001

Table 3

Unconditional Multiple Group Linear Growth Model (n=654)

	TRIBAL (n=50)		PUBLIC ON (n = 353)		PUBLIC OFF (n=143)		MOVED (n = 108)	
	Est	SE	Est	SE	Est	SE	Est	SE
Slope with Intercept	.	.	.	.	−.18	.23	−.31	.24
Intercept	5.82 ***	.22	6.03 ***	.07	5.93 ***	.12	5.97 ***	.15
Slope	−.03	.12	−.38 ***	.05	−.24 ***	.07	−.27 **	.10
Variance OF								
Intercept	1.2 **	.39	.84 ***	.11	1.5 **	.45	1.44 **	.48
Slope	.	.	.	.	.40 *	.18	.48 *	.22

†
p .10

*
p .05

**
p .01

***
p .001

"." indicates para meter has been fixe d to 0

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Table 4

Conditional Multiple Group Linear Growth Model (n=654)

	TRIBAL (n=50)		PUBLIC ON (n = 353)		PUBLIC OFF (n=143)		MOVED (n = 108)	
	Est	SE	Est	SE	Est	SE	Est	SE
Intercept	5.47 ***	.44	5.95 ***	.11	6.17 ***	.16	6.21 ***	.22
Intercept ON								
Grade	.01	.20	−.28 ***	.07	−.35 **	.11	.06	.20
Female	.79	.54	.28 *	.14	.11	.23	−.23	.26
Single Mother Home	−.27	.43	.19	.18	−.33	.27	−.41	.36
Financial Strain	−.12	.43	−.12	.12	−.20	.16	−.69 **	.27
Slope	−.08	.20	−.27 ***	.07	−.30 **	.10	−.29 †	.16
Slope ON								
Grade	−.17 †	.10	.06	.05	.01	.07	−.10	.13
Female	.17	.27	−.23 *	.10	−.01	.14	.08	.18
Single Mother Home	.02	.29	−.10	.13	.16	.16	.04	.23
Financial Strain	.13	.20	−.03	.09	−.09	.10	.15	.17
School Adjustment ON								
Discrimination	−.36	.30	−.64 **	.22	−.77 *	.33	−.41	.32
Slope with Intercept	.	.	.	.	−.15	.23	−.33	.26
Variance OF								
Intercept	.99 ***	.29	.76 ***	.11	1.27 **	.41	1.33 **	.47
Slope	.	.	.	.	.35 *	.18	.46 *	.21

† p .10

* p .05

** p .01

*** p .001

"." indicates para meter has been fixe d to 0