Psychosocial Foundations of Academic Performance in Culture-Based Education Programs for American Indian and Alaska Native Youth: Reflections on a Multidisciplinary Perspective

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Since the Oglalas settled at Pine Ridge, it has been the contention of many policy makers that education is the panacea for the socio-economic ills besetting the society and the means for bringing Indians into the mainstream of American life. Education has been available to the Oglalas for 89 years and the problems remain almost as unresolved as they were that day in 1879 when Red Cloud helped to lay the cornerstone for the first school. For this (and other reasons), the educational system has often become the scapegoat among those impatient for greater progress. Blame has been placed on the schools for many of the social evils, personality disorders and general cultural malaise. But is it fair to expect the schools to counteract all of the negative aspects of the total socio-economic milieu? Is it realistic to expect the educational system alone to achieve a better life for the Oglalas when the environment offers few alternative economic goals and little opportunity to control one's destiny, when many children come from poverty-stricken and unstable family situations? True, the schools have failed in some respects, but the blame is not entirely theirs (Maynard & Twiss, 1970, p. 94).

Can we say the same thing today that was said by Maynard and Twiss and others 34 years ago? What accounts for American Indian/Alaska Native children dropping out at higher rates and having significantly lower academic performances than Euro-Americans? Is lower academic achievement due primarily to schooling or to community and familial factors? Are we following a path towards academic improvement for indigenous children? In this article, we argue that variables outside of the school environment and in-school

variables must be carefully and concurrently considered in order to understand and improve the school performance and achievement of American Indian/Alaska Native children. Furthermore, for a culture-based education approach (CBE) to succeed it must chart a course toward a set of ideals and principles that are consistent with the dynamic nature of the lifeways and thoughtways of tribal or village cultures.

Culture-Based Educational Approach

The guiding assumption of CBE is that a discontinuity between home and school environments serves to confuse and alienate indigenous children, fostering a sense of inadequacy and lack of self-efficacy. Factors implicated in this discontinuity include value differences between home and school social organization, the absence of accurate statements about American Indian/Alaska Native cultures by teachers and in textbooks, and differences in language. Furthermore, the *acculturational stress hypothesis* postulates that psychological stress increases as institutional and societal forces directly and indirectly influence American Indian/Alaska Native people to take on the values, life styles, and world-views of the dominant society (Berry, 1997; Berry, 1998). Psychological stress leads to increases in personal anomie and perceived marginality that confuses identity formation and erodes a positive sense of self worth.

For example, Bryde (1966) examined the differences in academic achievement between Plains tribal youth and Euro-Americans and found a *crossover* effect such that American Indian students scored above national testing norms between the fourth and sixth grade, then lower at the eighth grade level. Furthermore, Bryde found that American Indian youth exhibited higher levels of reported depression, withdrawal, and social-emotional self-alienation as compared to Euro-Americans. Although more recent investigations have failed to demonstrate a connection between acculturation stress and low academic achievement among minority groups (Havinghurst, 1970), we suggest that future researchers more carefully examine the relationships between school success, cultural change, stress, and cultural identity.

Prevention and Multifactorial Approaches: Modeling Prevention Strategies

In the next section of this article we first identify and explore a variety of psychosocial variables and models which may inform our pursuit of an appropriate CBE approach. Following the discussion, we then develop a CBE framework for use in understanding and improving the school performance and achievement of American Indian/Alaska Native children.

Substance Abuse Prevention

Researchers who study substance abuse prevention have found that the most successful methods are comprehensive, multileveled, combined with multiple intervention strategies, and targeted at multiple social and health outcomes

(Weisberg, Kumpher, & Seligman, 2003). Nation, Crusto, Wandersman, Kumpher, et al. (2003) suggest that an effective substance abuse program is one that provides information and increases awareness while building specific skills associated with change in behavior. Furthermore, they recommend that prevention programs be targeted at multiple levels of intervention, such as family, community, and peer group. For example, Wang, Haertel, and Walberg (1997) examined factors predictive of academic achievement and found that, of the top 11 indicators, eight involved social and emotional learning within and outside of the classroom. These factors included student-teacher interactions, parental support, classroom management, social-behavioral attributes, motivational affective attitudes, relationship to peer group, school culture, and classroom climate. This led Greenberg, Weissberg, O'Brien, Zins, et al. (2003) to recommend use of a Social Emotional Academic Learning (SEAL) framework as a multidimensional methodology to improve school performance.

The message is consistent in prevention research: prevention of serious adolescent problems including school related problems can be reduced or eliminated through early intervention in multiple domains, i.e., family, school, and community, and through addressing the many components that will lead to a successful school experience, i.e. academic, social, emotional, interpersonal, and cultural.

Theory of Triadic Influences

The Theory of Triadic Influences offers a promising direction to substance abuse prevention and intervention research (Flay & Petraitis, 1994; Petraitis, Flay, & Miller, 1995). As shown in Table 1, the theory provides a more complete picture of the etiology of early substance use and suggests early prevention during the stage of experimental substance use (ESU), prior to committed use, abuse, and dependence. Triadic theory posits three types of influence (intrapersonal, social/interpersonal, and cultural/ attitudinal), and within each, three levels of influence (ultimate, distal, proximal), organized in a 3 X 3 matrix.

Table 1
A Matrix of Types and Levels of Experimental Substance Use (ESU)
in Adolescence

Level of influence	Types of influence		
	Social/interpersonal	Cultural/attitudinal	Intrapersonal
Ultimate	Characteristics of people in social support system	Aspects of immediate community surroundings	Personality/biological disposition
Distal	Attachment/role model substance-specific attitudes/behaviors	Values/behavior that contribute to ESU	Affective states/behavioral skills motivating ESU/ undermining refusal
Proximal	Beliefs about normative nature of ESU/pressure to use	Cost/benefit evaluations of ESU	Beliefs about ability to use or avoid substances

Table adapted from Petraitis, Flay, & Miller (1995).

Durlak and Wells (1997) conducted a meta-analysis of 177 prevention studies for children and adolescents. Their analysis provides empirical support for the efficacy of primary prevention programs in reducing abuse and dependence and increasing competencies. However, they and Lorion (1990) note that prevention specialists have often taken a one size fits all approach in the design and implementation of their programs. Instead, these and other researchers (Cavell, Ennett, & Meehan, 2001; Flay & Petraitis, 1994; Komro & Toomey, 2002) suggest that prevention and intervention programs are most likely to be successful if the type and level of intervention as well as the characteristics of the targeted population are taken into account. Such population characteristic may include relevant cultural beliefs and practices as well as community norms (Ramey & Ramey, 1992). Furthermore, Resnicow, Solar, Braithwaithe, Ahluwalia, and Butler (2000) argue that researchers should consider a culture's deeper structure, such as indigenous explanatory models of development, pathology, and human functioning, when designing prevention and intervention programs.

Deep Cultural Prevention Approaches

Investigating the deep structure of an ethnocultural unit is critical in work with culturally distinct ethnic minorities in remote, rural, face-to-face kinship communities such as Alaska Native villages and American Indian reservations. A theoretical model (Figure 1) developed in conjunction with Alaska Natives takes these factors into account and offers an emic understanding of protection from substance abuse (Allen, Mohatt, Rasmus, Hazel, Thomas, & Lindley, in press; Mohatt, Rasmus, Thomas, Allen, Hazel, & Hensel, 2004). Figure 1 represents the reciprocal relationships between community (CC), family (FC), and individual characteristics (IC). Strong, cohesive communities support the development of healthy families, networks of social support, and enhance positive individual characteristics such as resilience. Furthermore, these social factors reduce the likelihood of alcohol-related trauma exposure, and, if psychological and physical trauma is experienced, provide support and assistance. This occurs, in part, through development of individual characteristics that enhance the likelihood of a response to trauma or ESU experiences. This includes behavior such as thinking over (TO) an experience, as well as the broad and reciprocal consequences of one's actions. The reflective process (TO) may then facilitate a turning point (TP) in Life Time Abstainer (LA) and Non-problem drinker (NP) outcomes, resulting in a decision not to abuse alcohol, and a reaffirmation of contribution to family and community. We therefore suggest the use of this type of multifactorial model for academic success among Indian and Native children.

Situated Variables and Levels of Importance

Designing and conducting multidisciplinary studies of education in the field is complex as it involves the collaboration and assistance of social and behavioral scientists often in settings that are not familiar to the principal researcher. Each
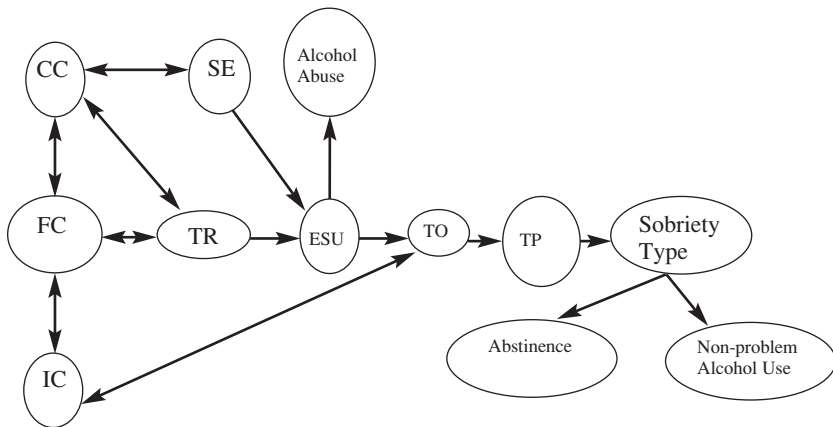
Figure 1. Heuristic Model of Alaska Native Protective Pathways.

Legend and key.
CC (community characteristics) *Yuut cayarait* includes the way the community organizes family, school, and community activity, and enforces alcohol policy and the drinking status of the community. CC includes role models, opportunities, limits, and safe places.

FE (family environment) *Ilakelriit cayarait* includes family functioning in such areas as cohesion, conflict, recreation outlets, moral-spiritual focus, and home organization. Factors included parent-child relationship, affection and praise, transmission of expectations, safety and protection from harm and models of sobriety.

IC (individual characteristics) *Yuum Ayuqucia* are belief in self (communal and self-mastery), wanting to contribute to others and *Ellanqaq* (Yup'ik mindfulness and awareness).

SE (social environment) *Yuuyaraq* includes role models and social support from extended family, peers, and other adults outside of immediate, nuclear family.

TR (trauma) *Akngirneq* includes sexual abuse, domestic violence, and death of loved ones. It includes being a victim and observing others being a victim. Individuals' perception of trauma are critical, as is the meaning they attach to their experience and how they respond to it.

ESU (experimental substance use) *Meqerraaryaurtellemni* are early experiences with substances, including alcohol, prior to the establishment of use patterns or abstinence.

TO (thinking it over) *Umyuangcallemni* involves reflecting on one's experience and developing a personal life narrative.

TP (turning point) *Ayuqucinellemni* comes out of this reflective process and leads to a decision about how the person will use alcohol.

of the collaborators may approach the study and measurement of variables from different levels of analysis in tandem with different methodological procedures. The addition of stakeholders and community and village participants compounds the difficulties of mounting field-based multidisciplinary research protocol. Most important the community will maintain careful observation of the proceedings, expect their voice to be heard in all phases of the study, and also expect to benefit from the study's findings in some constructive and positive way. The principal challenge for the researcher is to identify useful and culturally appropriate *methodological etics*—research procedures that are both sensitive and appropriate for use with all ethnocultural populations (Trimble, 1988).

All social and psychological variables are situated within an ethnocultural context and thus can have quite different meanings from one group to another. Therefore, their levels of importance must be tied to a model or framework that is closely aligned with the community of interest and the prevailing theory on which the researcher constructs the research plan. Furthermore, in approaching an understanding of the factors that influence the education of American Indians and Alaska Natives, consideration must be given to the community, the family, and the individual, in addition to facets that might influence each of these broad constructs. In the following section we explore the importance of these constructs and their witting and unwitting influence on educational performance and achievement. We are reminded of the importance of a multidisciplinary research approach by Sherif and Sherif (1969), who point out that, "a rounded picture of human behavior and human societies must ultimately incorporate both the psychological and sociological levels of analysis" (p. 20).

Community Level

Community readiness: A community domain's influence on youth has long been recognized in terms of resiliency factors (Bernard, 1991), and therefore the investigation of communities' ability to address the prevention of school failure and enhancement of success is critical (Plested, Oetting, & Swanson, 2000; Plested, Edwards, & Jumper-Thurman, 2003). This recognition has resulted in an increased effort among preventionists to gain higher levels of community involvement (Hawkins, Catalano, & Miller, 1992; Kaftarian & Hansen, 1994). A central aspect to community initiatives has been empowerment whereby people and groups gain mastery over their affairs (Florin & Wandersman, 1990; Rappaport, 1987). Furthermore, empowerment and social capital theory support the need for increases in opportunities for children to engage in sober activities and in proactive learning (Connell, Kubisch, Schorr, & Weiss, 1995; Minkler, 1997).

Community involvement can play a major role in preparing children for their educational experiences. Researchers have found that childhood experiences before the beginning of formal education can have profound effects on school performance and achievement. Therefore, Magnusen and Waldfogel (2005) as well as Brooks-Gunn and Markman (2005) proposed that preschool children

participate in high-quality, center-based, early-childhood educational programs before formal schooling. With parental and community support, preschool programs employing teachers with experience in early childhood education can be set up to assist children with health, behavioral, and learning difficulties. The curriculum can serve as preparation for the experiences that children will have in kindergarten and in the elementary grades. Additionally, parents and community members could be invited to participate in the design and instruction of the preschool program, working closely with teachers and children in a supportive educational atmosphere.

<u>Communal and historical trauma:</u> Researchers have argued that problems experienced in indigenous families have roots in the trauma experienced by the collective tribal group (Duran & Duran, 1995; Mohatt, McDeramid, & Montoya, 1988; Napolean, 1996). Napolean argued that the great death from flue was a devastating trauma for Alaska Native villages; Duran and Duran that massacres and wars have created indelible traumas that are the root of many of the social and psychological problems experienced by indigenous groups; and Mohatt, McDeramid, and Montoya that communal trauma contributes to dysfunction within family systems and is an important factor in disrupting social and cultural meaning systems, particularly a sense of coherence (Antonovsky, 1980). The researchers then suggest that these effects lead to significant vulnerability to a variety of health and educational problems.

Each of these researchers assumes that the effects of communal trauma are passed from generation to generation, although the mechanisms of transmission are not clearly delineated. Davoine and Gaudilliáere (2004) suggest that historical traumas may be transmitted through gaps in linguistic structure, i.e., secrets, lies, and distortions of history. Although they provide no empirical evidence, they do present many clinical examples of transmission in which historical traumas are manifested in the therapeutic process. There is, however, empirical evidence of vulnerability to PTSD from transgenerational historical trauma among victims of the holocaust. Yehuda, Schmeidler, Wainberg, Binder-Brynes, and Duvdevani (1998) studied 100 adult offspring of Holocaust survivors and 44 comparison group individuals not offspring of survivors (traumatic experiences in the life course of offspring groups did not differ). The researchers found that adult survivor offspring had greater prevalence of current and lifetime PTSD and other psychiatric diagnoses than the controls in both a community and a clinical sample.

The problem with the theories of historical trauma and transgenerational transmission is the assumption that every indigenous person experiences communal historical trauma. However, data from the psychosocial literature indicates that not every indigenous person suffers from Post-Traumatic Stress Syndrome (PTSD) or other clinically relevant syndromes such as depression. Furthermore, not every community appears to have suffered historical trauma in the same way, be they direct descendents of individuals from the many massacres, families who experienced multiple losses from tuberculosis and influenza, or the many families that experienced significant distress when relocated to new village

sites, reservations, or boarding schools without choice. A more careful measurement approach should attempt to delineate the parameters that differentiate historical trauma from current communal trauma (e.g. racism, poverty, and natural disasters), trauma that was historical and not communal, as well as trauma experienced over an individual's life span. Currently, it does not appear to us that such an undifferentiated construct can explain the causation of most psychosocial problems, especially one as complex as school achievement. Furthermore, poverty is a considerable factor that should not be ignored in this line of investigation. In fact, it may well be the most critical of variables to consider given the numbers of Indian and Native children who experience poverty, as well as its impact on nutrition, development, aspirations, and access to opportunity.

Student-faculty contact out-of-school: Cuseo (2004) presents an empirical case that out-of-class contact between faculty and students is necessary for the improvement of academic achievement in university students. For example, Astin (1993) conducted a 25 year, 500,000 student, and 1300 institution longitudinal study and found that student-faculty interaction outside of the classroom correlated more strongly with college satisfaction than any other single variable. Additionally, other researchers have found out-of-class contact correlates with academic achievement (Astin & Panos, 1969; Centra & Rock, 1970), personal and intellectual development (Endo & Harpel, 1982; Lacey, 1978; Pascarella & Terenzini, 1978), and educational aspirations (Astin & Panos, 1969).

Family level: Our model suggests that improving the parent-child bond so that the family environment becomes one of safety, affection, communication, and learning will enhance educational attainment. A number of important resiliency factors have been identified in the literature, which support the profound influence of positive parent-child relationships. Of particular relevance are effective family management, communication, and parent child interaction (Brody & Flor, 1998; Brody, Flor, Hollett-Wright, McCoy & Donovan, 1999; Brody & Ge, 2001; Kumpfer & Alvardo, 2003; Reilly, 1979; Tec, 1974). Other researchers suggest that adding family-focused interventions to community-based interventions (Borduin et al., 1994; Pentz, 1995) or school-based interventions (Webster-Stratton & Taylor, 2001) increases effectiveness.

Individual level resilience factors: Prevention researchers have found that self-efficacy (mastery that is individually focused), development of foresight, and communal efficacy (mastery by joining with others) are significant childhood protection factors. For example, Hobfoll, Jackson, Hobfoll, Pierce and Young (2002) found that communal efficacy was protective against depression. Garmezy (1985; 1987) and Werner (1989) suggest that protective factors often fall into three broadly conceived categories: 1. Internal or dispositional attributes of the individual; 2. Familial attributes; and 3. External support, or contextual factors. Eccles and Appleton (2002) and Pittman et al. (2001) suggest that youth prevention programs focus on competence, children's contributions to community, and building connections to others (Greenberg, Weissberg, O'Brien,

Zins, et al., 2003). Catalano, Berglund, Ryan, Lonczak, and Hawkins (2002) emphasize the importance of promoting positive development that includes self-efficacy, belief in the future, resilience, and behaviors that promote prosocial development. Greenberg, Weissberg, O'Brien, Zins, et al. (2003) advocate strategies for prevention that are comprehensive, have clear fidelity implementation, and, additionally, are adapted to a local context and culture. Interventions to build these factors often involve classes that are focused on skill building and are highly interactive.

Cultural identity, acculturation, and enculturation: Historically, identity formation has been considered a critical variable for understanding the development, emotional well-being, and academic achievement of indigenous adolescents (Erikson, 1963). For example, Erikson observed that

> The early childhood among the Dakota, within the limits of poverty and general listlessness, is a relatively rich and spontaneous existence which permits the school child to emerge from the family with a relative integration, i.e., with much trust, a little autonomy, and some initiative. This initiative between the ages of nine and twelve is still naively and not too successfully applied to play and work; while it becomes inescapably clear only in puberty that what initiative has been salvaged will not find identity. Emotional withdrawal and general absenteeism are the results (Erikson, 1963, p. 163).

Cultural, ethnic, and racial identities are considerably complex, diverse, and somewhat elusive constructs (Trimble, 2000; Trimble, Helms, & Root, 2002; Trimble, 2005). What emerges from an inquiry in the measurement and conceptualizing of acculturation and ethnic identity is uncertainty and ambiguity—uncertainty about the meanings of acculturation, identity, ethnicity, and race; uncertainty about a person's "appraisal of the social world and its significance as an expression of self identity" (Geertz, 2000, p. 225); uncertainty about what theory best explains their psychosocial dynamics, components, and processes; uncertainty about the cultural equivalence of measures and how best to control for cultural bias; and uncertainty about the applicability of the findings generated by incongruent and inconsistent measures.

Apart from accounting for demographic distributions there are uncertainties about the causal relationship between acculturation and ethnic and racial identity outcomes—most empirical studies using ethnic and racial identity along with acculturation as a moderating or independent variable fail to predict anything of psychosocial importance such as drug and alcohol use, depression, adolescent delinquency, grieving, eating disorders, and suicide, among many other variables. Weinreich and Saunderson (2003) asserted that theories of ethnic, cultural, and racial identity represent, "a kaleidoscope set of conceptualizations (where) methods of assessment of parameters of identity, deriving from disparate conceptualizations of self and identity, are often unrelated" (p. 361).

Notwithstanding the many complexities and uncertainties related to identity, many researchers have argued that cultural identity and traditionality are risk factors in the context of schooling, such that children with higher levels of tribal

language use and cultural identity drop out at higher rates (James, Chevez, Beauvais, Edwards, & Oetting, 1995). Although the majority of research examining the link between cultural identity and academic achievement has been qualitative in nature (still of great value, but not reaching the desired level of proof), researchers have begun to impose stricter methodological procedures in their investigations.

Recently, three empirical studies have shown a link between school success and enculturation (Hornett, 1990; Whitbeck, Hoyt, & Stubben, 2001; Zimmerman, Ramirez, Wahienko, Walter, & Dyer, 1994). Enculturation is a multifactorial construct that includes cultural identity, involvement in traditional cultural activities, and involvement in and the importance of traditional spirituality. What appears important to us is that this approach is multifactorial. Rather than only focusing on an intrapsychic process of identity formation it examines behaviors and attitudes related to current traditional cultural activities. Additionally, the approach focuses on resilience as a means of defining a child's resourcefulness. Researchers have also developed approaches which allow the examination of both the child's identity formation and the resources necessary for a child to participate in community cultural activities (Whitbeck, Hoyt, & Stubben, 2001).

As another example of the multifactorial approach, Caldwell, Sellers, Bernat, and Zimmerman (2004) investigated the relationships between racial identity, parental support, and alcohol use among at-risk African American high school students. Both the extent to which an adolescent felt positively about African Americans (private regard) and the perceived support of their father were associated with less self reported alcohol abuse. Children with high private regard and who reported that race was a more central part of their identity also used alcohol less frequently. Again, we must caution that the empirical data does not unequivocally support cultural and racial identity as being a protective or resilience factor in relation to school performance.

Health Factors

Suicide, loss, and depression: Suicide among American Indian/Alaska Native populations is significantly higher than among Euro-Americans, especially among men under 30 years of age (Middlebrook, LeMaster, Beals, Novins, & Manson, 2001). Suicide rates among Alaska Natives have increased 500 percent since 1960 (Brems, 1996). In 1998, the rate for Alaska Natives was 40 per 100,000, in contrast to the U.S. baseline of 11 per 100,000 (Alaska DHSS, 2000). However, this data does not do justice to the impact of suicide on children within a small rural village or reservation community. For example, in one village of about 700 inhabitants there were six suicides in one year, five boys and one girl, all under 25 years of age (S. M. Rasmus, personal communication, January, 2005). The devastating impact of this on the village children and families is enormous and serves as a disturbing reminder as to the importance of examining grief and loss as factors that influences a child's learning.

Substance abuse: Given that substance abuse, including alcohol abuse, is a central risk factor for school failure we want to devote some discussion to it. It is also quite important because to understand the pathways to alcohol abuse one must look outside of the individual to a variety of important non-school contexts. Rather than a review of the literature we will focus on a sampling of current studies consistent with bulk of research on American Indian substance abuse.

For example, Beauvais, et al. (Beauvais and LaBoueff, 1985; Beauvais, 1996; Beauvais, et al., 2004) have provided data on the rates and patterns of drug use among American Indian adolescents as part of an ongoing study that began in 1974. Surveys have been administered to representative samples of American Indian middle and high school students living on reservations across the country. In the most recent reporting on 1308 American Indian students, Beauvais, et al. (2004) found very high frequencies of self-reported drug and alcohol use. Furthermore, use of all substances was significantly higher among this sample compared to national 12th graders (see Table 2). Within the sample of 12th graders, the frequency of marijuana use in the last year or last month was twice as high as a national sample and approximately 20% reported school problems and that use hurt their grades. The highest occurrence of drug use was outside of the school context: i.e., "at parties" (53%), "at night with friends" (63%), "while driving around" (52%), and "at home" (43%). Lower rates of use were associated with the school environment: "on the way to school" (27%), "during school hours at school" (24%), "during school hours away from school" (33%), and "right after school" (38%) (see Table 4). Use of alcohol (see Table 3) followed a similar pattern with the majority of use occurring away from school. Students reporting the highest levels of use were more likely to have problems in school, and conversely, those with school problems were at a higher risk of drug abuse (see Table 5).

Table 2
**Percent of Indian and Non-Indian 12th Grade Drug Use Ever
and Within the Last 30 Days**

	Lifetime		30-Day	
Drug	**Indian**	**Non-Indian**	**Indian**	**Non-Indian**
Any Alcohol	93%	80%	58%	50%
Been Drunk	86%	62%	42%	32%
Marijuana	88%	49%	51%	22%
Inhalants	24%	14%	1%	2%
Cocaine	26%	9%	7%	3%
Stimulants	30%	16%	4%	5%
Heroin	2%	2%	1%	1%
Psychedelics	34%	13%	8%	3%
Cigarettes	83%	63%	-	-
Smokeless Tobacco	46%	23%	-	-

Table 3
Context of Alcohol Use Among American Indian 9th and 12th Grade Students
1998-2001

Context	9th	12th
On the way to school	11%	11%
During school hours at school	13%	13%
During school hours away from school	20%	26%
Right after school	23%	21%
At school events	20%	27%
At parties	55%	74%
At night with friends	62%	78%
While driving around	34%	50%
At home (parents aware)	11%	16%
At home (parents unaware)	40%	37%

Table 4
Context of Drug Use Among American Indian 9th and 12th Grade Students
1998-2001

Context	9th	12th
On the way to school	32%	27%
During school hours at school	28%	24%
During school hours away from school	34%	33%
Right after school	44%	38%
At school events	35%	30%
At parties	51%	57%
At night with friends	65%	63%
While driving around	51%	52%
At home	52%	43%

Table 5
Reported Consequences of Alcohol Use Among American Indian
9th and 12th Grade Students 1998-2001

Context	9th	12th
Got a traffic ticket	2%	7%
Had a car accident	9%	12%
Got arrested	23%	25%
Had money problems	15%	20%
Got in trouble at school	13%	18%
Hurt school work	19%	20%
Fought with other kids	28%	33%
Fought with parents	20%	29%
Damaged a friendship	16%	26%
Passed out	40%	55%
Couldn't remember what happened	40%	51%
Made you break something	29%	32%

Beauvais found that the variables predicting this pattern of use were often family or peer focused (see Tables 2-5 and Figure 1). Students who used drugs were more likely to have friends that used drugs. Furthermore, those at the higher levels of drug abuse were much more likely to have failed a year in school, to have been kicked out or suspended, or to have dropped out of school. They were also more likely to report knowing a friend who had these experiences. Furthermore, the highest group of users indicated that they had significantly less involvement in supervised activities with other children and adults, e.g., sports, clubs, and church groups. They also reported that their families had significantly less involvement with school and were less likely to support supervised activities such as clubs.

The pattern of out of school opportunities, coupled with peer cluster effects, conformity pressures, and family variables appear to be critical to an understanding of the relationship between substance abuse and school problems. Familial variables, such as family conflict, family support, and family type (traditional or non-traditional) were all predictive of substance use and achievement. Furthermore, students with higher levels of alcohol use were more likely to report that their families would not strongly try to stop them from using, although most participants did report that their families are strongly against drug use. The Beauvais, et al. data helps build a case for a multifactorial approach to understanding substance abuse and its relationship to school success or failure in terms of out of school factors and peer pressure.

Schools are often targeted as the source of community drug problems. However, drugs and alcohol use occurs most frequently in non school settings. This suggests that drug use is a community wide issue and one that the schools alone cannot address. Since schools are typically where youth are drawn together, they are an important partner in drug use prevention, especially when taken from an educational approach. However, if the efforts of schools are not supported in the rest of the community, particularly the family, their impact will be significantly attenuated.

Other health factors. A variety of other conditions affect the educational performance of indigenous children, such as otitis media, obesity, childhood type two diabetes, and stress. Much of the variance in these disorders is accounted for by out of school environmental variables including quality of housing, types of foods available and one's ability to afford them, as well as access to excellent health care. All of these variables relate to poverty, socioeconomic factors, and in many cases cultural change. Additionally, the literature on the prevention of these disorders consistently suggests multifactorial and multicomponent interventions as preferred to single domain interventions.

Methodological Problems for Research in Indigenous Communities

The changing demographic context in the United States calls into question the relevance of a social and psychological sciences field that historically has not included ethnic and racial groups and that fostered an ethnocentric research

agenda bound by time and place (Bernal, Trimble, Burlew, & Leong, 2002). How well prepared will educators be in the delivery of quality educational programs and services to ethnic and language minorities? How will education programs handle the teaching of an increasingly diverse student population? How will the science of social and behavioral science research build a knowledge base that can be generalized to the population as a whole? New priorities for research, teaching, and practice must be developed so that the body of knowledge within educational fields holds greater relevance and applicability. The changing demographics will inevitably move the field of education toward the full consideration of diversity in ways that are inclusive and truly reflect our changing demographic context. The question is, how soon and with what tools?

Interest in social and psychological research with ethnocultural groups has been increasing dramatically, particularly in education and psychology. Concern of many ethnic communities, including research in general and the presence of investigators in their communities, has increased as contacts with social and behavioral scientists increased. The rising community concerns accompanied by the emergence of community-based research review committees presents extraordinary challenges for researchers—challenges that are only beginning to be fully and seriously acknowledged at methodological, procedural, and conceptual levels. The most important challenge though is the responsible conduct of researchers while they are in the field, especially as it is reflected in the relationship they establish with their respondents (Cassell & Jacobs, 1987; Fisher, 1999; Fisher & Wallace, 2000; Trimble & Fisher, in press).

Increasing numbers of American Indian and Alaska Native communities are becoming concerned about the presence of "outside" researchers; many are intolerant and unforgiving of past research efforts. The so-called "safari-scholar" era has come to an end and "data mining" is no longer acceptable (Trimble, 1988). More now than ever, tribal and village leaders demand that research occur in their communities under their direction and control. Researchers should be prepared to collaborate with communities, share results that have practical value, and accept the conditions imposed by the community in gaining access to information and respondents (Fisher, Hoagwood, Boyce, Duster, et al., 2002).

There are numerous methodological issues associated with the conduct of field based research; the ethical and responsible conduct of the researcher is one of them. But the biggest issues in moving from science to practice in the field for the researcher are the canons for proof of effectiveness and the methodologies that they require. The main theoretical framework is that one should have randomization, either at the individual, school, or community levels. Ethically, communities have refused being used as or designated as control groups that are either a *no intervention condition* or a *comparison intervention* that the researcher does not believe will be as salient. In the case where a researcher believes unequivocally that both interventions have the potential for equal effectiveness, but does not know which one will work best, there does not seem to be a problem for communities (Fisher, Hoagwood, Duster, & Frank, et al., 2002). One option

is to use cross-over or time series designs (Biglan, Ary, & Waggoner, 2000) in which either a community or a set of individuals will receive the intervention at a later time. The problem with this option has been that many National Institutes of Health (NIH) peer review groups typically consider these as quasi-experimental and that time series design will not meet the standards for proof comparable to randomized controlled designs.

Randomizing at the individual level raises significant methodological problems. Villages and communities in rural contexts are small and remote. Culturally, Indian and Native communities are kinship based so that there are significant interactions between extended families. In this context individual randomization makes little practical sense since there is the potential of significant contamination. If some children have y curriculum or are in y intervention group and others have z curriculum or z intervention they are likely to share what they learned, discuss the content of the sessions, and even want to participate in each others' sessions. Our sense is that the NIH as well as other interested funding groups must embrace time-series designs as well as have the flexibility for other more quasi-experimental designs with adequate fidelity measures for discriminating the effects of various variables (e.g., pre and post tests, repeated measures on single case studies) so as to avoid the black box problem. Finally, narrative and other qualitative methods continue to be needed in order to facilitate the understanding of intervention research from an indigenous perspective and as a more appropriate fit with face to face oral cultures. This implies to us that mixed method designs using qualitative and quantitative methods are to be valued for research in indigenous communities (Trimble & Fisher, in press).

Summary Recommendations and Conclusions

We have tried to paint a picture of the complexity of a culture-based educational model and related interventions. Our sense is that a multifactorial explanatory model of culture-based education research must include out-of-school factors and create intersections between the key domains of family, community, and school in order to raise resilient children. We believe that the literature and the wisdom of experience suggest the following variables as critical to integrate within designs:

- Community.
    - The readiness of a community for change, its awareness of the issues, its efforts to improve the schooling and learning, and the resources and policies that it has available to encourage formal schooling in the community.
    - Levels of poverty and socio-economic factors that impact the health and welfare of children.
    - Levels and types of historical trauma at the community and family level.
    - Student-teacher interactions outside of classrooms and schools.

- Family.
  - Safety and protection of children and the reduction of domestic violence and substance abuse by adults.
  - Demonstration of affection and a sense of being special and loved by parents, grandparents, siblings, and other family members.
  - Opportunities for intergenerational learning and contributions to the community and family.
  - Effective communication: talking with children about school, learning, values, and their roles in the future.
  - Supporting teachers and the school agenda (e.g., homework, in-school disciplinary standards, and academic standards) by building a consensus between the family, community, and school.
- Individual.
  - Communal mastery or efficacy (i.e., a sense that one can solve problems) and effect one's environment by joining with others).
  - Cultural identity as multidimensional.
  - Increasing adolescent's refusal skills during experimental substance abuse.
  - Increasing opportunities to reflect on reasons for living and hopefulness.
  - Self-efficacy: how a child can compose their own life narrative.

As an example of how this might function we examine a most promising culture-based methodology focused on improving math teaching and learning. The Lipka group (Lipka & Adams, 2004; Lipka & Sharp, in press) in Alaska has developed, over many years of significant ethnographic work, a careful application of cultural principles to a math teaching CBE curriculum. The project uses a mixed methods research approach, trying various randomized methods with mixed success, and has continued to carefully search for the most rigorous methods to demonstrate effectiveness. For example, they have examined the qualitative factors of classroom organization, such as how the curriculum connects lessons to community knowledge, and whether it brings the community's culture directly into the teaching of mathematics. It makes culture, western and indigenous, visible in the lessons and teaching. Learning is multidimensionalized by using tacit and practical knowledge, abstraction, memorization, and the reinforcement of values and traditions. Our sense is that it could add a component directed at training parents in methods designed to bring children, teachers, and Elders together outside of the classroom. This would serve to reinforce the traditional learning on which the curriculum is based. Lipka reported that some of this had happened spontaneously, such as discussions about constructing a smoke house based on the model taught in the math curriculum. We realize that this complicates the design and has major implications for statistical power. Rather than dismiss these ideas as too expensive, time consuming, and organizationally difficult, we should look to the next decade as a time for

researchers to develop standards of interventions that are multicomponent, multidimensional, and based on a multifactorial theory of change. We believe that CBE must become more inclusive of out-of-school factors in order for this progress to occur.

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