ENTREPRENEURSHIP EDUCATION: A STRENGTH-BASED APPROACH TO SUBSTANCE USE AND SUICIDE PREVENTION FOR AMERICAN INDIAN ADOLESCENTS

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Abstract: American Indian (AI) adolescents suffer the largest disparities in substance use and suicide. Predominating prevention models focus primarily on risk and utilize deficit-based approaches. The fields of substance use and suicide prevention research urge for positive youth development frameworks that are strength based and target change at individual and community levels. Entrepreneurship education is an innovative approach that reflects the gap in available programs. This paper describes the development and evaluation of a youth entrepreneurship education program in partnership with one AI community. We detail the curriculum, process evaluation results, and the randomized controlled trial evaluating its efficacy for increasing protective factors. Lessons learned may be applicable to other AI communities.

INTRODUCTION

Leading substance use and suicide prevention researchers working with North American Indigenous communities have issued a call to action: to develop prevention models targeting key determinants of mental health and well-being at the level of whole communities situated within their larger socioeconomic contexts (Chandler & Lalonde, 2008; Wexler et al., 2015). Past substance use and suicide prevention research has focused on problems and has been deficit based. Researchers urge for new initiatives that examine societal-level factors such as poverty and unemployment, and make an explicit commitment to local capacity building and community health, with an overarching emphasis on resilience (Allen, Mohatt, Fok, Henry, & Burkett, 2014; Wexler et al., 2015).

248

Toward this end, this paper describes an entrepreneurship education program for American Indian (AI) youth and the study design evaluating its efficacy, currently being conducted within a tribal reservation context. The entrepreneurship education program and evaluation plan were co-created through a tribal-university partnership targeting known protective factors for substance use and suicide at individual, peer, and community levels. First, we review the literature on targeted protective factors that form the rationale for utilizing an entrepreneurship education intervention for substance use and suicide prevention. Second, we describe the methods used to develop and implement the program, including process evaluation results, as well as those used to evaluate program impact on youths' psychosocial, behavioral health, educational and economic outcomes.

Background on Protective Factors

Connectedness

Looking across well-supported theoretical and conceptual frameworks for substance use and suicide prevention, connectedness is a cross-cutting strength-based construct (Whitlock, Wyman, & Moore, 2014). Connectedness is the degree to which an individual or group possesses a subjective sense of emotional interrelatedness (belonging, caring, value and trust) and a willingness to share with and seek resources from the communities in which they are embedded (Whitlock et al., 2014). Connectedness is interactive; there are three pathways by which connectedness may protect against substance use and suicidal behaviors: 1) intrapersonal responses and processes, 2) collective responsibility and action, and 3) positive norms and expectations (Whitlock et al., 2014). Among Indigenous North American populations, adolescents are the most disproportionately affected by substance use and suicidal behaviors, which share similar risk profiles (Allen et al., 2014; Barlow et al., 2012; Borowsky, 2010; Tingey et al., 2012). Connectedness has been negatively correlated with suicidal thoughts and behaviors in a sample of Native youth (Borowsky, Resnick, Ireland, & Blum, 1999).

Connectedness to Caring Adults. For adolescents, connectedness to systems in which youth-adult relationships are developed may confer protection against suicide by increasing the likelihood that negative affect, distress, high-risk behavior and direct warning signs of suicide will be noticed and addressed proactively, and by facilitating connection to community resources (Whitlock et al., 2014). Adolescents also may be less at risk for suicide if they experience the

neurophysiological benefits of connectedness (i.e., believing one is of value and cared for) and are able to better regulate their emotions through social affiliation and attachment with caring adults (Whitlock et al., 2014).

School and Peer Connectedness. Connectedness to school may have unique import to AI adolescents who suffer high rates of school dropout and related unemployment and poverty. School connectedness, "the belief held by students that adults and peers in the school care about their learning as well as about them as individuals," has been associated with several positive outcomes (Centers for Disease Control and Prevention [CDC], 2009, p. 3). School connectedness improves school attendance, staying in school, grades, and test scores, and students who do well academically are less likely to engage in risky behaviors (CDC, 2009). School connectedness is one of the strongest protective factors against substance use, school absenteeism, early sexual initiation, violence, and risk of unintentional injury (Resnick et al., 1997). Furthermore, perceived closeness, feelings of belonging, and engagement with teachers and peers predict lower likelihood of suicide among students (O'Keefe & Wingate, 2013; Whitlock et al., 2014). Other studies with AI communities have found that school completion and a positive attitude towards education are protective against suicide (Alcantara & Gone, 2007; Whitbeck, Hoyt, Stubben, & LaFramboise, 2001).

Hope, Mastery, and Self-control

Constructs related both to youths' sense of connectedness and lower risk for substance use and suicide are hope, mastery, and self-control (O'Keefe & Wingate, 2013). Hope has been defined as a positive motivational state based on being goal-directed and having pathways to meet those goals (O'Keefe & Wingate, 2013). Students who are connected to school possess a greater sense of self-efficacy and motivation to meet their academic goals; they are able to connect present and future behaviors regarding academic/career goals and generate plans to achieve those goals (Snyder, 2002). Hopelessness has been found to correlate positively with depression and negatively with self-esteem and prosocial behavior (Kazdin, Rodgers, & Colbus, 1986). Among a sample of AI/Alaska Native students from three universities representing 27 tribal communities, having hope and optimism were found to decrease suicidal ideation after controlling for age, sex, marital status, and household income (O'Keefe & Wingate, 2013).

Additional protective factors that reduce the effects of stress and adverse life events are especially important in tribal socioeconomic contexts (CDC, 2009; Substance Abuse and Mental Health Services Administration's Center for the Application of Prevention Technologies [SAMHSA CAPT], 2015). Unemployment, lack of social capital, and poverty are predisposing

risk factors for negative mental health outcomes, and rural AI communities with lower socioeconomic status have higher substance use and suicide rates (Alcantara & Gone, 2007; Allen et al., 2014). Protective factors identified as contributing to resiliency amidst socioecological risks for substance use and suicide include attachment, mastery, and self-control (SAMHSA CAPT, 2015).

Positive Youth Development

A positive youth development framework posits that youth who develop mastery and are supported by caring adults and peers to cultivate new skills are more likely to exercise control over their lives by making healthy choices and withstanding external pressures (SAMHSA CAPT, 2015). Positive youth development approaches are designed to utilize and enhance youths' strengths, provide opportunities for skill building, and foster healthy peer and adult relationships (SAMHSA CAPT, 2015). Substance use and suicide prevention models reflective of this approach attempt to engage youth in prosocial activities across school, peer, and community contexts in a manner that is productive and constructive (SAMHSA CAPT, 2015).

Entrepreneurship Education

Entrepreneurship education is a positive youth development approach with promise to promote protective factors identified as meaningful to AI adolescent substance use and suicide prevention at individual, peer, and community levels. Entrepreneurship education is the pursuit of opportunity beyond the resources currently controlled (Stevenson, 1983; Stevenson & Gumpert, 1985; Stevenson & Jarillo-Mossi, 1991). Entrepreneurship education increases motivation for under-resourced groups to complete formal education, promotes vocational and social skills, and enables youth to contribute to their community's economic development (Graig, Owen, & Ritter, 2012; Lee, Chang, & Lim, 2005; Youth Entrepreneurship Strategy Group, 2008).

Entrepreneurship education has been shown to increase youths' feelings of security, affiliation, autonomy, identity, and achievement, as well as to improve confidence, knowledge, and ability (Graig et al., 2012; Lee et al., 2005; Youth Entrepreneurship Strategy Group, 2008). Entrepreneurship education gives youth the opportunity to discover hidden talents and uncover capabilities and skills they did not know they had. Entrepreneurship education has a positive impact on students' lives, whether or not they become entrepreneurs (Cheung, 2008).

Impact evaluation of entrepreneurship education programs is growing (Charney & Libecap, 2000; Matlay, 2005; Mwasalwiba, 2010). Several studies indicate youth receiving entrepreneurship education are more likely to increase their occupational aspirations and to have higher standardized test scores, better school attendance, lower dropout rates, and higher overall educational attainment (Barnett, 1995; Durlak, 1997; Lifschitz, 2011; Reynolds, Temple, Robertson, & Mann, 2001; Temple, Reynolds, & Miedel, 2000). Youth receiving entrepreneurship education also are more likely to take initiative and lead in business, arts, and sports activities and to demonstrate increased locus of control (i.e., the belief that achievement and goal attainment is due to their own actions and decisions and not due to chance or luck; Barnett, 1995; Durlak, 1997; Lifschitz, 2011; Reynolds et al., 2001; Temple et al., 2000). Entrepreneurship education has been shown to build key assets for positive youth development, translating to reductions in substance use, depression, and violence (Karcher, 2002, 2005; Karcher, Davis, & Powell, 2002; Karcher & Finn, 2005; Karcher & Lee, 2002; Karcher & Lindwall, 2003).

This paper describes the development and evaluation of a youth entrepreneurship education program in partnership with one AI community. We detail the content and competencies of the entrepreneurship education curriculum, implementation schedule, and randomized controlled trial evaluating its efficacy for increasing protective factors for substance use and suicide prevention. Lessons learned will have application to other AI and under-resourced Indigenous communities.

METHODS

Participating Tribal Community

The entrepreneurship education program and evaluation design were developed by a partnership between the White Mountain Apache Tribe (Apache) and the Johns Hopkins Center for American Indian Health (JHU). The Apache reside on the Fort Apache Indian Reservation in Northeastern Arizona, which consists of 1.6 million acres and is geographically isolated from other population centers. The primary sources of industry include a tribally owned timber and sawmill, casino, ski resort, and historical museum, as well as agriculture and livestock enterprises. Other major employers are the tribal health, social service, and education departments, Indian Health Service, Johns Hopkins University, and local schools. Despite these

economic and employment assets, negative economic forces have increased the number of unemployment claimants living on the Apache reservation by 320% (First Things First White Mountain Apache Tribe Regional Partnership Council, 2012).

The Apache population is young; over half (54%) of Apache tribal members are less than 25 years old, compared to approximately 35% within the U.S. All Races population (Indian Health Service, 2009). School dropout is high: In 2009, only 41% of students completed high school in 4 years (First Things First White Mountain Apache Tribe Regional Partnership Council, 2012). Apache students are scoring lower in reading and math literacy than youth statewide and youth who belong to other tribes in Arizona. In 2010, approximately 40% of Apache third graders were proficient or advanced in reading, compared with 75% statewide (First Things First White Mountain Apache Tribe Regional Partnership Council, 2012). The young age of the population, coupled with school incompletion, has led to approximately 60% of the community either "Not in the labor force" or unemployed, and the majority of people live below the federal poverty level (First Things First White Mountain Apache Tribe Regional Partnership Council, 2012).

An under-resourced context has contributed to what Apache community leaders describe as a pervasive feeling of hopelessness among their youth, which may be a contributing factor to high rates of substance use and suicide (Cwik et al., 2011; Mullany et al., 2009). Among a sample of Apache youth who attempted suicide ($n = 17$), the average score on the Hopelessness Scale for Children was 8.77 (range 0-17; SD, 2.02). A score ≥ 7 is equal to "high hopelessness," and 88% of this sample scored ≥ 7 (Cwik et al., 2016; Kazdin et al., 1986).

Community leaders detail how youth struggle to see the practical side of what they learn in school and have little incentive to study and stay in school (Cheung, 2008). A qualitative case-control study with Apache teens comparing those who engaged in binge alcohol use (cases) versus youth with no lifetime binge alcohol use (controls) found that controls were strongly connected to school and understood how their educational accomplishments would impact long-term career goals (Tingey et al., in press). Cases who had engaged in binge alcohol use were not attached to school; they had poor attendance and low grades, often did not graduate, and rarely were involved in structured activities outside of school settings (Tingey et al., in press).

Intervention Development

Research partners agreed to explore a youth entrepreneurship education model to promote culturally based protective factors for substance use and suicide prevention. A participatory research approach shaped the exchange of ideas between community and academic partners and the structure of the resulting intervention (Fisher & Ball, 2005). A Community Advisory Board (CAB) of youth and adults was formed to explore avenues for intervention development. CAB members discussed how entrepreneurship is a well-established platform in the Apache community, from which individuals and families have filled current economic and employment opportunity gaps. For example, "Tailgate" is a community-based open-air daily market featuring local vendors selling food, goods, and services not offered through large-scale businesses on the reservation. Artisans crafting Apache beadwork, jewelry, burden baskets, moccasins, and clothing are well known and called upon for supplying community members with necessary items for traditional ceremonies and events. These activities are rooted in Apache traditions and values and serve as repertoires of behaviors that have buoyed the Apache people through generations of adversity.

Working from a positive youth development framework, the CAB and research partners established key goals for the intervention: 1) to teach entrepreneurship education blended with life skills, 2) to promote school connectedness (e.g., a commitment to school, attachment to prosocial peers, belief in schools norms about positive behavior), and 3) to foster supportive relationships between youth, positive peers, and caring adults (Dickens, Dieterich, Henry, & Beauvais, 2012). We culled existing best practices from both Native and non-Native youth entrepreneurship education (see programs "Making Waves" at http://fourbands.org/makingwaves/index.htm and "Network for Teaching Entrepreneurship" at www.nfte.com). Life skills content was drawn from previous curriculum materials and activities developed by tribal-academic partners targeting communication, social problem solving, and cognitive restructuring (Cwik et al., 2016; Barlow et al., 2012; Tingey, Mullany, Strom, Hastings, Barlow, et al., 2015; Tingey, Mullany, Strom, Hastings, Lee, et al., 2015).

Research partners chose members of the Apache community to facilitate the entrepreneurship education intervention. Facilitators received rigorous training in the entrepreneurship curriculum and were required to pass competency exams prior to administration. This choice of interventionist broadens the pool of caring adults to which

adolescents can connect. Enabling members of the Apache community to learn, practice, and teach entrepreneurship education also builds the local workforce and economy, which further strengthens the program's community-level impact and fosters sustainability.

Research partners and community collaborators embarked on a pilot implementation year to refine the entrepreneurship education program. A pilot cohort of youth participated in the program and provided feedback on curriculum content, method, and schedule of delivery. Together with CAB members, and community collaborators, the research team processed and interpreted this feedback via in-person and phone-based meetings, after which the program structure and curriculum were finalized for implementation and evaluation.

The resulting entrepreneurship education intervention, Arrowhead Business Group-Apache Youth Entrepreneurship Program (ABG), is a 16-lesson curriculum taught via discussion, games, hands-on learning, and multimedia. Approximately 60 hours of training over an 8-month period focus on entrepreneurship and business development, life skills self-efficacy, and finance. Basic math computation skills and literacy are reinforced by training. ABG has varying instructional levels to address literacy challenges and either delayed or advanced academic skills.

Each curriculum lesson is designed for delivery by two adult facilitators (one male, one female) to mixed-gender groups of youth. Many lessons also incorporate presentations by Apache entrepreneurs and community business leaders as well as Elders, who reinforce aspects of Apache culture that promote entrepreneurship and connectedness to positive Apache identity. The first 10 lessons are taught during a 5-day residential summer camp; the last 6 lessons are taught through workshops during the academic year. ABG curriculum is highly experiential and skills based. Youth practice public presentations and social networking skills. They map community assets with a focus on gaps in the local economy and identify opportunities for new businesses. Youth conduct market research and learn branding, marketing, and basic accounting concepts, which are then applied to a hands-on community-based selling event.

The six workshops focus on groups of youth developing small business plans. At the last lesson, youth present their business plans and can be awarded funding for small business startup. Youth who start businesses are then assigned a community-based mentor for continued support. Additional outside mentoring is provided by community volunteers who give ongoing startup advice to youth and their business groups (see Table 1).

Table 1
ABG Lessons and Schedule of Implementation

Lesson	Lesson Name & Content	Timing
1	**Getting Started with Goal Setting** Personal strengths, values, goals, building a web of support	Camp
2	**Effective Communication and Problem Solving** Verbal and nonverbal communication, listening, problem solving	Camp
3	**Planning Ahead for a Great Future** Graduating high school, building a good resume	Camp
4	**Jumpstart Your Savings, Grow a $Million** Saving money, small purchases add up	Camp
5	**Basic Budgeting** Budgeting, needs, wants, flexible expenses	Camp
6	**Our Community Needs** Community mapping, products/services, nonprofits, identifying needs	Camp
7	**Entrepreneurship… Say What?** Introduction to entrepreneurship, characteristics of entrepreneurs	Camp
8	**Get in the Game: Starting a Business** Business opportunity identification, linking business ideas to personal interests/strengths	Camp
9	**It's All in a Name** Business names, logos, slogans	Camp
10	**The Nuts and Bolts of a Business Plan** Components of a business plan	Camp
11	**Economic Leaks in Our Community** How money moves into and out of the community	Workshop 1
12	**Hitting the Bull's Eye: Marketing for Success and Making Your Mark** Target market, market research, marketing strategies	Workshop 2
13	**Be Yourself** Personal strengths, building confidence, resume writing, interview process	Workshop 3
14	**Smart Money** Personal finance, tracking money, cash flow (aka "business budget")	Workshop 4
15	**Community Selling Event** Practical application of learned content, community development	Workshop 5
16	**The Final Countdown: Presentation Day** Public speaking, communication, building confidence, business development	Workshop 6

Evaluation Design

The CAB and the Apache Tribal Council and Health Advisory Board endorsed using a 2:1 (intervention:control) randomized controlled design to evaluate ABG intervention impact on psychosocial, behavioral health, educational, and economic outcomes from baseline up to 24

months post-intervention. The study was approved by relevant tribal, Indian Health Service, and University research review boards. This manuscript was approved by the Apache Tribal Council and Health Advisory Board. There is no data safety and monitoring board for this study.

Participants

Participants are AI adolescents ages 13-16 years who are members of the White Mountain Apache community and are enrolled in a local high school. We are recruiting participants using a nonprobability sampling frame and obtaining informed consent from parents/legal guardians and assent from youth for their study participation.

Randomization

A 2:1 allocation ratio is applied to yield twice as many participants in the intervention group as the control condition. While equal randomization (1:1) is the most statistically efficient model, unequal randomization was chosen because increasing the number of youth exposed to ABG's potential benefits was preferred by community leaders. The 2:1 ratio results in a modest loss of statistical power, but enables us to reduce the proportion of study funding spent on the control condition and increases our learning through secondary analyses within the intervention arm (Dumville, Hahn, Miles, & Torgerson, 2006).

Control Condition

Youth randomized to the control condition will participate in simultaneous recreational and art activities held three times during the academic year. Youth randomized to receive the ABG intervention will also receive the control condition in order to attribute differences in outcomes to the ABG intervention. All recreational and art activities are led by Apache community members. All participating youth (intervention and control) will be divided into large mixed-gender groups of approximately 50, to receive the control condition.

Sample Size

Using a repeated measures design (a minimum of one baseline and two follow-up measures per youth), the total target sample is 600 AI adolescents with 400 youth in the intervention arm and 200 youth in the control arm. This sample size will be sufficient to detect a shift of one fifth of a standard deviation in each of the study's psychosocial scale means with 80% power. Participating youth are being recruited annually in three cohorts (years 1, 2, and 3) with approximately 133 and 66 youth in the intervention and control cohorts each year. We anticipate that roughly 25% of the sample size will be lost to attrition at the final follow-up evaluation timepoint, resulting in a final sample size of 450 (300 intervention, 150 control).

Data Collection

The assessment battery is a series of self-report measures administered via Audio Computer Assisted Self Interview (ACASI) delivered to all participants at baseline, immediately post-intervention, and 6 months, 12 months, and 24 months post-intervention. The assessment battery measures the following domains: 1) *psychosocial*: connectedness, hopefulness/hopelessness, self-efficacy, locus of control, depressive symptoms; 2) *behavioral health*: alcohol and drug use, sexual risk taking, suicidal behavior, and violence; 3) *educational*: high school attendance, academic achievement (grades, standardized test scores), college and occupational interests; and 4) *economic*: entrepreneurial activity, economic advancement/empowerment, and small business knowledge, including overall intervention satisfaction. All assessments have been selected for their past use among AI populations, pilot tested with Apache youth, and revised to reflect local language, clarity, and flow (see Table 2).

ACASI technology allows participants to complete assessments on a computer with headphones and a corresponding voice reading questions. Research partners have found in the Apache population that self-reporting of sensitive behaviors is more reliable and valid when ACASI technologies are used compared to pencil-and-paper self- or interviewer-administered questionnaires (Mullany et al., 2013; Vereecken & Maes, 2006). ACASI's audio-based technology ensures privacy and confidentiality and also prevents low literacy from being a barrier to data collection. The baseline survey is administered at the time of consent. Local study staff members arrange a confidential location for administration of all remaining follow-up evaluation surveys. Participants receive Wal-mart gift cards (range, $25-100) after completing each follow up (see Table 2).

Table 2
Data Collection Measures and Time Burden (in minutes)

Outcome	Measure	Baseline	Post	6 Months	12 Months	24 Months
I. Psychosocial						
Depressive symptoms	Patient Health Questionnaire 9- (PHQ-9) (Spitzer et al., 1999)	3	3	3	3	3
Locus of control	Norwicki-Strickland Locus of Control (Nowicki et al., 1973)	10	10	10	10	10
Social connectedness	Hemingway Measure of Adolescent Connectedness (Lohmeier et al., 2011)	15	15	15	15	15

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Table 2, Continued
Data Collection Measures and Time Burden (in minutes)

Outcome	Measure	Baseline	Post	6 Months	12 Months	24 Months
Social connectedness, continued	Awareness of Connectedness Scale (Mohatt et al, 2011)	3	3	3	3	3
Life skills self-efficacy	Life Skills Self-Efficacy Scale (LaFromboise et al, 1995)	5	5	5	5	5
Hopelessness/hopefulness	Hopelessness Scale + Apache Hopefulness Scale (Hammond et al., 2009; Kazdin et al., 1986)	5	5	5	5	5
II. Behavioral Health						
Substance use	Youth Risk Behavior Survey (substance use subscales) (Brener et al., 2004)	5	5	5	5	5
Sexual and risk-taking behaviors; violence	Youth Risk Behavior Survey (various subscales) (Brener et al., 2004)	12	12	12	12	12
III. Educational						
School attendance (absenteeism, tardiness), and performance	School Records Review (no time burden)	0	0	0	0	0
College and occupational interest	Across Time Orientation Measure (ATOM) (Nakkula et al., 2003)	4	4	4	4	4
IV. Entrepreneurial and Economic						
Entrepreneurial knowledge and activities	Investigator-developed survey items	3	3	3	3	3
Economic advancement and empowerment	Investigator-developed survey items	5	5	5	5	5
Participant program satisfaction	Investigator-developed survey items	0	10	10	0	0
Total Time Burden:		75	85	75	75	75

Analysis

Baseline characteristics will be summarized and compared across study groups to assess the success of randomization. Initial analyses will be conducted under an "intent-to-treat" model in which data are analyzed according to study group assignment at randomization (Lavori, 1992; Lavori, Dawson, & Shera, 1995). We will then conduct "completer analyses" on those participants completing at least 50% of intervention lessons. Dichotomous outcomes will be

evaluated using Fisher's exact tests and logistic regression analysis at discrete timepoints. Some scale items may be assessed continuously; that is, continuous outcomes will be measured at multiple timepoints or accumulated over the course of the study, and evaluated using generalized linear mixed models (GLMM) or survival models (Breslow & Clayton, 1993; McCulloch & Searle, 2001). Model equations will include an indicator for study group (i.e., intervention or control) and a function of time to capture trajectories or thresholds.

Because temporal relationships are not known, exploratory analyses will be conducted to examine shapes of plotted means and confidence intervals for each assessment period. We will fit bivariate GLMMs with treatment and time in order to choose the specification of time with the best model fit, and explore simple and fractional polynomial time functions, categorical specifications and thresholds (Cui et al., 2009; Royston & Sauerbrei, 2008). All analyses will be conducted using STATA, Version 12 with statistical significance at $p < 0.05$.

RESULTS: PROCESS EVALUATION

ABG Program Development

ABG program development was iterative, as we adapted conventional entrepreneurial concepts for the Apache cultural context. Many existing youth entrepreneurship models we explored valued an individual approach to business development. However, in the participating and other AI communities, a collective approach is more appropriate. Thus, the ABG curriculum was designed to promote a cooperative methodology to entrepreneurship and to teach youth how the entire community benefits from business creation. For example, the ABG curriculum includes youth participation in a community-based selling event (i.e., at Tailgate or a basketball game). Profits from these selling events are given back to the community either via charitable contribution or donation to a local entrepreneur.

The ABG program also differs from existing entrepreneurship curricula because it prioritizes building life skills before teaching business and financial literacy. Life skills development is not explicitly included in other national entrepreneurship programs. The CAB stressed an immediate need to build the confidence and self-esteem of ABG program participants; reconnect them to personal, family, and community values; and teach related goal setting and attainment. The first three ABG lessons tie youth to their ancestral heritage as

Apaches and AIs and teaches them how having self- and ethnic identity provides a strong foundation for being entrepreneurs. These concepts are expounded in subsequent lessons, which discuss how values and identity impact achievement of short- and long-term goals.

ABG Program Delivery

During pilot implementation, a multipronged feedback process ensured continuous quality improvement of program delivery. Curriculum lesson structure and content were evaluated immediately upon completion of the summer camp and each follow-up workshop. Facilitators completed feedback forms after each lesson, answering questions about lesson timing, flow, content, and additional thoughts. Also, pilot youth participants completed informal feedback forms. Information from facilitator and pilot youth participant feedback forms was brought to group meetings of the research team, which was composed of the curriculum manager, project manager, project coordinator, and facilitators. The research team discussed feedback from youth and staff and identified items for which CAB input was required. Relevant feedback was brought to the CAB for reaching consensus in decision making and edits to the curriculum and its delivery. The following paragraphs highlight several key program changes that were made based on this feedback process.

Camp Length

The first 10 ABG lessons are taught during the residential summer camp. Initially, the camp lasted 3 days and participants arrived on the morning of the first day. During the pilot implementation year, we determined (through the feedback process described above) that 3 days were insufficient to cover all curriculum content and allow enough time for skill building and free play. The camp is now nearly 5 full days, with participants arriving in the evening of the first day for a welcome dinner.

Camp Location

The camp location also changed from off-reservation in the pilot year to on-reservation at a tribally owned site. Program staff and community collaborators wanted to demonstrate firsthand how the community benefits from hosting the camp, while cultivating pride in the ABG program and connection to the local culture. However, because the camp was the first time many of the youth were away from home for multiple nights in a row, there were concerns before the move that youth might become homesick and would be picked up from the on-reservation site by their families on day 1 or 2, causing them to miss the rest of the experience. During pilot

implementation, however, staff noticed homesick youth typically felt much better by midweek and wanted to stay at camp. Because these concerns were mitigated and the community would benefit from hosting the camp, we changed the camp location to be on the reservation.

Academic Year Workshops

After camp, youth complete workshops. During pilot implementation, we encountered several challenges that led to changes in the workshop structure. Initially, workshop content was organized into 12 additional lessons. Each month for a year, groups of youth participated in one content-rich after-school lesson, after which they attended a hands-on weekend workshop. The after-school lessons and weekend workshops proved difficult to coordinate logistically. Because of extensive transportation needs, especially on weekends, lessons often started very late, not allowing time to complete lesson content and build relationships. In addition, many youth had competing activities (e.g., sports, family commitments). Youth also were not engaged in these workshops. Via feedback from pilot youth, we learned that content-heavy lessons taught after school felt too much like being in class. Program staff also realized that weekend lessons did not focus enough on the youths' own business plan development. Lesson content in general was not interactive enough to maintain youth interest.

Thus, the workshop curriculum was restructured into six lessons (3-4 hours each), delivered once per month and including a meal. Workshops have a flexible delivery structure and can be hosted after school, during the evenings, or on weekends, depending on the participating youth and co-occurring community events. ABG core curriculum content is taught at camp, allowing the six follow-up workshops to be tailored to the youth and their specific business plans. Workshop activities are hands-on, building on concepts taught at camp in a simulation context (youth work together to create a mock business to apply their new skills). Further support for business plan development was added to the curriculum in the form of business plan templates, which are highly visual, step-by-step guides that are broken down by business plan section to help youth develop a competitive plan.

Target Participant Age

Existing youth entrepreneurship programs typically target older adolescents and young adults, as some curriculum concepts (e.g., finance, accounting) are advanced. During the pilot year, we found younger participants (~ages 13-16 years) were more engaged in the learning process than were older youth. Also, enrolling younger youth enables longer-term follow up and support during critical transition periods (middle school to high school and high school to

college). The Apache community suffers from high rates of school dropout; thus, shifting our target population to youth ages 13-16 years was endorsed by members of the CAB to promote school attendance and college matriculation.

CONCLUSION

Entrepreneurship education is a promising model of positive youth development to promote life skills and school connectedness and to reduce high risk behaviors in AI communities. Evaluation of such a program is a highly innovative approach to substance use and suicide prevention with potential for replication in other Indigenous and similarly stressed communities. If study aims are achieved, the field will have a new strength-based strategy to reduce adolescent substance use and suicide, the largest health disparities faced by AI communities. Immediate impacts promoting educational and occupational aspirations will deepen understanding of employing strengths and resiliency factors in research, as well as support the health, well-being, and improvement of socioeconomic conditions in AI communities.

Many AI and Indigenous communities are dismayed by research that emphasizes negativity and problems, and evaluation of positive youth development interventions for impacts on substance use and suicide is rare (O'Keefe & Wingate, 2013; SAMHSA CAPT, 2015; Stiffman et al., 2007; Whitlock et al., 2014). Recognizing that connectedness is a fundamental focal point of Indigenous cultures and value systems, coupled with a simultaneous call to promote marginalized communities engaging in productive economic activities, investment in a groundbreaking approach such as entrepreneurship education for substance use and suicide prevention is justified (Allen, Mohatt, Fok, & Henry, 2009; Allen et al., 2006; Mohatt et al., 2004; Struthers et al., 2003).

REFERENCES

Alcantara, C., & Gone, J. P. (2007). Reviewing suicide in Native American communities: Situating risk and protective factors within a transactional-ecological framework. *Death Studies, 31*(5), 457-477. http://dx.doi.org/10.1080/07481180701244587

Allen, J., Mohatt, G., Fok, C., & Henry, D. (2009). Suicide prevention as a community development process: Understanding circumpolar youth suicide prevention through community level outcomes. *International Journal of Circumpolar Health, 68*(3), 274-291. http://dx.doi.org/10.3402/ijch.v68i3.18328

Allen, J., Mohatt, G. V., Fok, C. C. T., Henry, D., & Burkett, R. (2014). A protective factors model for alcohol abuse and suicide prevention among Alaska Native youth. *American Journal of Community Psychology, 54*(1-2), 125-139. http://dx.doi.org/10.1007/s10464-014-9661-3

Allen, J., Mohatt, G. V., Rasmus, S. M., Hazel, K. L., Thomas, L., & Lindley, S. (2006). The tools to understand: Community as co-researcher on culture-specific protective factors for Alaska Natives. *Journal of Prevention & Intervention in the Community, 32*(1-2), 41-59. http://dx.doi.org/10.1300/J005v32n01_04

Barlow, A., Tingey, L., Cwik, M., Goklish, N., Larzelere-Hinton, F., Lee, A., . . . Walkup, J.T. (2012). Understanding the relationship between substance use and self-injury in American Indian youth. *The American Journal of Drug and Alcohol Abuse, 38*(5), 403-408. http://dx.doi.org/10.3109/00952990.2012.696757

Barnett, W. S. (1995). Long-term effects of early childhood programs on cognitive and school outcomes. *The Future of Children, 5*(3), 25-50. http://dx.doi.org/10.2307/1602366

Borowsky, I. W. (2010). Expose, heed, and coordinate care: Priorities for mental health promotion and suicide prevention. *Pediatrics, 125*(5), 1064-1065. http://dx.doi.org/10.1542/peds.2010-0610

Borowsky, I. W., Resnick, M. D., Ireland, M., & Blum, R. W. (1999). Suicide attempts among American Indian and Alaska Native youth: Risk and protective factors. *Archives of Pediatrics & Adolescent Medicine, 153*(6), 573-580. http://dx.doi.org/10.1001/archpedi.153.6.573

Brener, N. D., Kann, L., Kinchen, S. A., Grunbaum, J. A., Whalen, L., Eaton, D., . . . Ross, J. G. (2004). Methodology of the Youth Risk Behavior Surveillance System. *MMWR Recommendations and Reports, 53*(RR-12), 1-13. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5312a1.htm

Breslow, N., & Clayton, D. (1993). Approximate inference in generalized linear mixed models. *Journal of the American Statistical Association, 88*(421), 9-25. http://dx.doi.org/10.1080/01621459.1993.10594284

Centers for Disease Control and Prevention. (2009). *School connectedness: Strategies for increasing protective factors among youth.* Atlanta, GA: U.S. Department of Health and Human Services.

Chandler, M. J., & Lalonde, C. E. (2008). Cultural continuity as a moderator of suicide risk among Canada's First Nations. In L. Kirmayer, & G. Valaskakis (Eds.), *Healing traditions: The mental health of Aboriginal peoples in Canada* (pp. 221-248). Vancouver, BC: University of British Columbia Press.

Charney, A., & Libecap, G. D. (2000). *Impact of entrepreneurship education.* Kansas City, MO: Kauffman Center for Entrepreneurial Leadership.

Cheung, C. (2008). Entrepreneurship education in Hong Kong's secondary curriculum: Possibilities and limitations. *Education + Training, 50*(6), 500-515. http://dx.doi.org/10.1108/00400910810901827

Cui, J., de, K. N., Abramson, M., Del, M. A., Benke, G., Dennekamp, M., . . . Sim, M. (2009). Fractional polynomials and model selection in generalized estimating equations analysis, with an application to a longitudinal epidemiologic study in Australia. *American Journal of Epidemiology, 169*(1476-6256; 1), 113-121. http://dx.doi.org/10.1093/aje/kwn292

Cwik, M. F., Tingey, L., Lee, A., Suttle, R., Lake, K., Walkup, J. T., & Barlow, A. (2016). Development and piloting of a brief intervention for suicidal American Indian adolescents. *American Indian and Alaska Native Mental Health Research, 23*(1), 105-124. http://dx.doi.org/10.5820/aian.2301.2016.105

Cwik, M.F., Barlow, A., Tingey, L., Larzelere-Hinton, F., Goklish, N., & Walkup, J.T. (2011). Nonsuicidal self-injury in an American Indian reservation community: Results from the White Mountain Apache surveillance system, 2007-2008. *Journal of the American Academy of Child and Adolescent Psychiatry, 50*(9), 860-869. http://dx.doi.org/10.1016/j.jaac.2011.06.007

Dickens, D. D., Dieterich, S. E., Henry, K. L., & Beauvais, F. (2012). School bonding as a moderator of the effect of peer influences on alcohol use among American Indian adolescents. *Journal of Studies on Alcohol and Drugs, 73*(4), 597-603. http://dx.doi.org/10.15288/jsad.2012.73.597

Dumville, J. C., Hahn, S., Miles, J. N., & Torgerson, D. J. (2006). The use of unequal randomisation ratios in clinical trials: A review. *Contemporary Clinical Trials, 27*(1), 1-12. http://dx.doi.org/10.1016/j.cct.2005.08.003

Durlak, J. A. (1997). *Successful prevention programs for children and adolescents*. New York: Plenum Press.

First Things First White Mountain Apache Tribe Regional Partnership Council. (2012). *2012 needs and assets report.* Tucson, AZ: Wholonomy Consulting.

Fisher, P., & Ball, T. (2005). Balancing empiricism and local cultural knowledge in the design of prevention research. *Journal of Urban Health: Bulletin of the New York Academy of Medicine, 82*(2), iii44-iii55. http://dx.doi.org/10.1093/jurban/jti063

Graig, E., Owen, D., & Ritter. (2012). *Network for teaching entrepreneurship: Startup summer program evaluation* (Final report). Brooklyn, NY: Owen Consulting, Inc.

Hammond, V. L., Watson, P. J., O'Leary, B. J., & Cothran, D. L. (2009). Preliminary assessment of Apache hopefulness: Relationships with hopelessness and with collective as well as personal self-esteem. *American Indian and Alaska Native Mental Health Research, 16*(3), 42-51. http://dx.doi.org/10.5820/aian.1603.2009.42

Indian Health Service. (2009). *Trends in Indian health 2002-2003 edition.* Rockville, MD: U.S. Department of Health and Human Services, Public Health Service.

Karcher, M. J. (2002). The cycle of violence and disconnection among rural middle school students. *Journal of School Violence, 1*(1), 35-51. http://dx.doi.org/10.1300/J202v01n01_03

Karcher, M. J. (2005). The effects of developmental mentoring and high school mentors' attendance on their younger mentees' self-esteem, social skills, and connectedness. *Psychology in the Schools, 42*(1), 65-77. http://dx.doi.org/10.1002/pits.20025

Karcher, M. J., Davis, C., & Powell, B. (2002). The effects of developmental mentoring on connectedness and academic achievement. *The School Community Journal, 12*(2), 35-50. Retrieved from http://www.schoolcommunitynetwork.org/scj.aspx

Karcher, M. J., & Finn, L. (2005). How connectedness contributes to experimental smoking among rural youth: Developmental and ecological analyses. *The Journal of Primary Prevention, 26*(1), 25-36. http://dx.doi.org/10.1007/s10935-004-0989-6

Karcher, M., & Lee, Y. (2002). Connectedness among Taiwanese middle school students: A validation study of the Hemingway measure of adolescent connectedness. *Asia Pacific Education Review, 3*(1), 92-114. http://dx.doi.org/10.1007/BF03024924

Karcher, M. J., & Lindwall, J. (2003). Social interest, connectedness, and challenging experiences: What makes high school mentors persist? *Journal of Individual Psychology, 59*(3),293-315.http://utpress.utexas.edu/index.php/journals/journal-of-individual-psychology

Kazdin, A. E., Rodgers, A., & Colbus, D. (1986). The Hopelessness Scale for Children: Psychometric characteristics and concurrent validity. *Journal of Consulting and Clinical Psychology, 54*(2), 241-245. http://dx.doi.org/10.1037/0022-006X.54.2.241

LaFromboise, T., & Howard-Pitney, B. (1995). The Zuni Life Skills Development Curriculum: Description and evaluation of a suicide prevention program. *Journal of Counseling Psychology, 42*(4), 479-486. http://dx.doi.org/10.1037/0022-0167.42.4.479

Lavori, P. W. (1992). Clinical trials in psychiatry: Should protocol deviation censor patient data? *Neuropsychopharmacology, 6*(1), 39-48. Retrieved from http://www.nature.com/npp/archive/index.html

Lavori, P. W., Dawson, R., & Shera, D. (1995). A multiple imputation strategy for clinical trials with truncation of patient data. *Statistics in Medicine, 14*(17), 1913-1925. http://dx.doi.org/10.1002/sim.4780141707

Lee, S. M., Chang, D., & Lim, S. B. (2005). Impact of entrepreneurship education: A comparative study of the U.S. and Korea. *International Entrepreneurship and Management Journal, 1*, 27-43. http://dx.doi.org/10.1007/s11365-005-6674-2

Lifschitz, A. (2011). *NFTE participation and academic outcomes in Baltimore City public schools.* Report prepared for the Network for Teaching Entrepreneurship, New York, New York.

Lohmeier, J. H., & Lee, S. W. (2011). A school connectedness scale for use with adolescents. *Educational Research and Evaluation, 17*(2), 85-95. http://dx.doi.org/10.1080/13803611.2011.597108

Matlay, H. (2005). Researching entrepreneurship and education: Part 1: What is entrepreneurship and does it matter? *Education & Training, 47*(8/9), 665-677. http://dx.doi.org/10.1108/00400910610710119

McCulloch, C., & Searle, S. (2001). *Generalized, linear, and mixed models.* New York: John Wiley & Sons.

Mohatt, G.V., Ching Ting Fok, C., Burket, R., Henry, D., & Allen, J. (2011). Assessment of awareness of connectedness as a culturally-based protective factor for Alaska Native youth. *Cultural Diversity and Ethnic Minority Psychology, 7*(4), 444-455. http://dx.doi.org/10.1037/a0025456

Mohatt, G. V., Rasmus, S. M., Thomas, L., Allen, J., Hazel, K., & Hensel, C. (2004). "Tied together like a woven hat:" Protective pathways to Alaska Native sobriety. *Harm Reduction Journal, 1*(1), 10. http://dx.doi.org/10.1186/1477-7517-1-10

Mullany, B., Barlow, A., Goklish, N., Larzelere-Hinton, F., Cwik, M., Craig, M., & Walkup, J.T. (2009). Toward understanding suicide among youths: Results from the White Mountain Apache tribally mandated suicide surveillance system, 2001-2006. *American Journal of Public Health, 99*(10), 1840-1848. http://dx.doi.org/10.2105/AJPH.2008.154880

Mullany, B., Barlow, A., Neault, N., Billy, T., Hastings, R., Coho-Mescal, V., . . . Walkup, J.T. (2013). Consistency in the reporting of sensitive behaviors by adolescent American Indian women: A comparison of interviewing methods. *American Indian and Alaska Native Mental Health Research, 20*(2), 42-51. http://dx.doi.org/10.5820/aian.2002.2013.42

Mullany, B., Barlow, A., Neault, N., Billy, T., Jones, T., Tortice, I., . . . Walkup, J.T. (2012). The Family Spirit Trial for American Indian teen mothers and their children: CBPR rationale, design, methods and baseline characteristics. *Prevention Science: The Official Journal of the Society for Prevention Research, 13*(5), 504-518. http://dx.doi.org/10.1007/s11121-012-0277-2

Mwasalwiba, E. S. (2010). Entrepreneurship education: A review of its objectives, teaching methods, and impact indicators. *Education & Training, 52*(1), 20-47. http://dx.doi.org/10.1108/00400911011017663

Nakkula, M., Pineda, C., Dray, A., & Lutyens, M. (2003). *Expanded explorations into the psychology of entrepreneurship: Findings from the 2001-2002 study of NFTE in two Boston public health schools.* (Final Report). Cambridge, MA: Project IF/Harvard Graduate School of Education.

Nowicki, S., & Strickland, B. R. (1973). A locus of control scale for children. *Journal of Consulting and Clinical Pschololgy, 40*, 148-154. http://dx.doi.org/10.1037/h0033978

O'Keefe, V. M., & Wingate, L. R. (2013). The role of hope and optimism in suicide risk for American Indians/Alaska Natives. *Suicide & Life-Threatening Behavior, 43*(6), 621-633. http://dx.doi.org/10.1111/sltb.12044

Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., . . . Udry, J. R. (1997). Protecting adolescents from harm. Findings from the National Longitudinal Study on adolescent health. *The Journal of the American Medical Association, 278*(10), 823-832. http://dx.doi.org/10.1001/jama.1997.03550100049038

Reynolds, A. J., Temple, J. A., Robertson, D. L., & Mann, E. A. (2001). Long-term effects of an early childhood intervention on educational achievement and juvenile arrest: A 15-year follow-up of low-income children in public schools. *The Journal of the American Medical Association, 285*(18), 2339-2346. http://dx.doi.org/10.1001/jama.285.18.2339

Royston, P., & Sauerbrei, W. (2008). *Multivariable model-building: A pragmatic approach to regression analysis based on fractional polynomials for modelling continuous variables.* Chichester, England: John Wiley.

Snyder, C. R. (2002). Hope theory: Rainbows in the mind. *Psychological Inquiry, 13*(4), 249-275. http://dx.doi.org/10.1207/S15327965PLI1304_01

Spitzer, R. L., Kroenke, K., & Williams, J. B. (1999). Validation and utility of a self-report version of PRIME-MD: The PHQ primary care study. Primary care evaluation of mental disorders. Patient health questionnaire. *The Journal of the American Medical Association, 282*(18), 1737-1744. http://dx.doi.org/10.1046/j.1525-1497.2001.016009606.x

Stevenson, H. H. (1983). *A perspective on entrepreneurship.* Harvard Business School Working Paper, 9-384-131. Boston, MA: Harvard University Business School.

Stevenson, H. H., & Gumpert, D. (1985). The heart of entrepreneurship. *Harvard Business Review, 85*, 85-94. Retrieved from http://www.hbr.org

Stevenson, H. H., & Jarillo-Mossi, J. C. (1991). A new entrepreneurial paradigm. In P. R. Lawrence, & A. Etzione (Eds.), *Socio-economics: Toward a new synthesis* (pp. 185-210). Armonk, NY: M. E. Sharpe.

Stiffman, A. R., Brown, E., Freedenthal, S., House, L., Ostmann, E., & Yu, M. S. (2007). American Indian youth: Personal, familial, and environmental strengths. *Journal of Child and Family Studies, 16*(3), 331-346. http://dx.doi.org/10.1007/s10826-006-9089-y

Struthers, R., Kaas, M., Hill, D. L., Hodge, F., DeCora, L., & Geishirt-Cantrell, B. (2003). Providing culturally appropriate education on type 2 diabetes to rural American Indians: Emotions and racial consciousness. *Journal of Rural Community Psychology, E6*(1), 1-12. Retrieved from http://www.marshall.edu/jrcp/E6one_struthers.htm

Substance Abuse and Mental Health Services Administration, Center for the Application of Prevention Technologies. (2015). *Positive youth development: Using strengths to address alcohol abuse and suicide among American Indian and Alaska Native youth*. Rockville, MD: Author. Retrieved from http://www.samhsa.gov/capt/sites/default/files/resources/ strengths-address-alcohol-suicide.pdf

Temple, J. A., Reynolds, A. J., & Miedel, W. T. (2000). Can early intervention prevent high school dropout? *Urban Education, 35*(1), 31-56. http://dx.doi.org/10.1177/0042085 900351003

Tingey, L., Cwik, M., Chambers, R., Goklish, N., Larzelere-Hinton, F., Suttle, R., . . . Barlow, A. (in press). Motivators and influences on alcohol use among American Indian adolescents: A qualitative case control study. *Journal of Child and Adolescent Substance Use.*

Tingey, L., Cwik, M., Goklish, N., Alchesay, M., Lee, A., Strom, R., . . . Walkup, J.T. (2012). Exploring binge drinking and drug use among American Indians: Data from adolescent focus groups. *The American Journal of Drug and Alcohol Abuse, 38*(5), 409-415. http://dx.doi.org/10.3109/00952990.2012.705204

Tingey, L., Mullany, B., Strom, R., Hastings, R., Barlow, A., & Rompalo, A. (2015). The respecting the circle of life trial for American Indian adolescents: Rationale, design, methods and baseline characteristics. *AIDS Care, 27*(7), 885-891. http://dx.doi.org/10.1080/ 09540121.2015.1015481

Tingey, L., Mullany, B., Strom, R., Hastings, R., Lee, A., Parker, A., . . . Rompalo, A. (2015). Respecting the circle of life: One year outcomes from a randomized controlled comparison of an HIV risk reduction intervention for American Indian adolescents. *AIDS Care, 27*, 1087-1097. http://dx.doi.org/10.1080/09540121.2015.1028879

Vereecken, C. A., & Maes, L. (2006). Comparison of a computer-administered and paper-and-pencil-administered questionnaire on health and lifestyle behaviors. *Journal of Adolescent Health, 38*(4), 426-432. http://dx.doi.org/10.1016/j.jadohealth.2004.10.010

Wexler, L., Chandler, M., Gone, J. P., Cwik, M., Kirmayer, L. J., LaFromboise, T., . . . Allen, J. (2015). Advancing suicide prevention research with rural American Indian and Alaska Native populations. *American Journal of Public Health, 105*(5), 891-899. http://dx.doi.org/ 10.2105/AJPH.2014.302517

Whitbeck, L. B., Hoyt, D. R., Stubben, J. D., & LaFramboise, T. (2001). Traditional culture and academic success among American Indian children in the upper Midwest. *Journal of American Indian Education, 40*(2), 48-60. Retrieved from http://www.jstor.org/stable/ 24398333

Whitlock, J., Wyman, P. A., & Moore, S. R. (2014). Connectedness and suicide prevention in adolescents: Pathways and implications. *Suicide & Life-Threatening Behavior, 44*(3), 246-272. http://dx.doi.org/10.1111/sltb.12071

Youth Entrepreneurship Strategy Group. (2008). *Advancing entrepreneurship education.* Washington, DC: The Aspen Institute.

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