A POSITIVE YOUTH DEVELOPMENT PERSPECTIVE ON MENTAL DISTRESS AMONG AMERICAN INDIAN/ALASKA NATIVE YOUTH

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Abstract: Positive youth development approaches with American Indian/Alaska Native (AI/AN) youth have been particularly successful and promising. Utilizing a survey with 3,736 AI/AN students, we investigated the associations between risk and protective factors and significant mental distress of AI/AN youth. The protective factors were studied within the positive youth development framework, which includes positive developmental assets reflecting aspects of the Circle of Courage, a prior framework embodying core indigenous values for youth development and education to support youth at risk. Risk factors in the study included having experienced trauma, being bullied by peers, substance use, and skipping school; protective factors were social supports, out-of-school-time activity participation, healthy eating, and healthy sleeping behaviors. Through logistic regressions, we found that risk factors were associated with more mental distress, consistent with prior research. However, students who participated in out-of-school-time activities at least three times a week, were sleeping at least eight hours daily, and those reporting social supports, particularly family/community support and sense of empowerment, had lower likelihood of mental distress. In fact, the presence of these protective factors reduced the associations of risk factors and risky behaviors with mental distress.

INTRODUCTION

Although student learning, school success, and meeting state educational achievement standards are top education topics, mental health as a part of student wellness has gained substantial public awareness (e.g., EAB, 2020; National Association of Secondary School Principals, 2019; Shallowhorn, 2018). Considering the association between mental distress and educational attainment and academic achievement, mental distress is a component of educational
disparities (Becker & Luthar, 2002; Breslau et al., 2008; DeSocio & Hootman, 2004), where researchers acknowledge that some adolescent groups suffer from more considerable mental distress, such as American Indian and Alaska Native (AI/AN) youth.

AI/AN adolescents reported the highest rates of mental health issues, including depression and anxiety, compared to their peers with different racial/ethnic backgrounds (National Institute of Mental Health [NIMH], 2019; Serafini et al., 2017). Moreover, AI/AN adolescents had the highest suicide rates relative to other races/ethnicities in the United States (Center for Disease Control and Prevention [CDC], 2020; Jiang et al., 2015). For instance, in 2012–2013, the suicide rate among young adults 18 to 24 years old was 22.5% for AI/ANs, higher than White (15.4%), Latino (8.3%), Black (8.9%), and Asian (9.4%) young adults (Jiang et al., 2015). In addition, the intentional self-harm rate was highest for AI/AN youth aged 14 to 19 (CDC, 2020). Relatedly, alcohol use, smoking, and substance use were more prevalent among AI/AN youth (Substance Abuse and Mental Health Services Administration [SAMHSA], 2017). These disparities are well documented.

Mental health status is an important part of youth social, emotional, and academic development. Nevertheless, AI/AN students have been historically underserved (Guillory & Wolverton, 2008), and research regarding their academic and developmental outcomes is limited, due to consistently small samples (Peng & Wright, 1994; Hughes et al., 2009) and the complexity of racial, ethnic, and tribal characteristics (Demmert et al., 2006; Wall et al., 2000). Therefore, knowledge and practice regarding AI/AN student experiences and contexts must be understood to better meet their needs and support thriving, including both risk factors that affect their mental health status and protective factors that support their development.

In this study, we addressed mental health status and its associations with risk\(^1\) and protective\(^2\) factors. Using the 2019 Minnesota Student Survey (MSS), with a large sample of AI/AN students, we examined positive youth development perspectives of AI/AN students, including developmental supports and challenges, healthy lifestyle status, and family and social contexts. In examining elements of the ecology of youth development and the occurrence of mental distress, we offer a different elucidation of the developmental journeys of AI/AN students.

1 Variables associated with a higher likelihood of negative outcomes (SAMHSA, 2019).
2 Variables associated with a lower likelihood of negative outcomes or that reduce a risk factor’s impact (SAMHSA, 2019).
Risk Factors Associated with Mental Distress

Described in Burnette and Figley’s systematic review (2016), risk factors associated with the mental wellness of AI/AN adolescents include societal (e.g., historical oppression, discrimination), cultural (e.g., ethnic identity, spirituality, cultural connectedness), individual (e.g., self-esteem and self-worth, substance use, depression, self-care), familial (e.g., lack of family support, family income, parental mental health, family trauma and stressful life events), and community (e.g., community and school environments, peer influence and support) factors.

As a societal factor, longstanding historical trauma (e.g., negative stereotypes, microaggressions, forced relocation, and prohibition of cultural practices) has lasting impacts on the mental health and well-being of AI/AN communities and is a risk factor for mental distress (Brendtro et al., 2019; Campbell & Evans-Campbell, 2011; Evans-Campbell, 2008). Children and youth carry, as mental distress (emotional, behavioral, and mental health problems), lingering intergenerational trauma (Brokenleg, 2017). Cultural factors or assets, including cultural and ethnic identity, commitment to cultural tribal spirituality, and belonging to one’s own culture and value systems, are associated with positive mental health and well-being and lower mental distress and suicide ideation (Garrouette et al., 2003; Hill, 2009; LaFromboise et al., 1993; Masotti et al., 2020).

Individual factors, such as sex, age, family socio-economic status (SES), and race/ethnicity, are strongly associated with mental distress among adolescents. For instance, females and older youth have higher risk of experiencing mental distress or depressive symptoms (Ersan et al., 2018; NIMH, 2019). Similarly, adolescents from families with low SES are more likely to experience mental health problems (Schraedley et al., 1999). Low SES is associated with mental health problems directly, as well as indirectly, through individual (e.g., low quality of nutritional intake), relational (e.g., unhealthy social relationships with family members and peers), or institutional (e.g., school, neighborhood, unstable parental employment) factors (Yoshikawa et al., 2012). Moreover, mixed-race status is associated with higher risk of general health problems and mental health and behavioral problems among youth (Ersan et al., 2018; Garcia et al., 2019; Udry et al., 2003).

Negative family environments are another risk factor. AI/AN youth receiving mental health services reveal high rates of traumatic experiences, such as witnessing domestic violence or experiencing physical, emotional, and sexual abuse at the hands of family members, or living with someone who has substance abuse problems or engages in criminal activity (Borowsky et al., 1999; Burnette & Figley, 2016; Dickerson & Johnson, 2012; Grossman et al., 1991).
Similarly, negative school environments pose community-related risk factors. AI/AN youth often face peer victimization that includes behaviors like racism, cultural insensitivity, and stereotyping that leads to feelings of isolation, low self-esteem, and hopelessness in AI/AN youth (Galliher et al., 2011; Gloppen et al., 2018; Jaramillo et al., 2016; Messias et al., 2014; Silmere & Stiffman, 2006). Youth subsequently internalize these feelings, experience depression, or engage in high-risk behaviors, such as substance use (Boyd-Ball et al., 2006; Johnson & Tomren, 1999; Whitbeck et al., 2001) and suicide attempts (Barlow et al., 2012; Yu et al., 2005). Moreover, school absenteeism is associated with higher risk of depression, suicide ideation, self-harm, social exclusion, and lack of school connectedness, and these factors negatively impact adolescents’ emotional and mental health (Burton et al., 2014; Epstein et al., 2019; Gonzálves et al., 2018; Langille et al., 2015; Shochet et al., 2006).

Positive Youth Development

In this study, we promote a positive youth development framework providing an ecological and asset-based approach to AI/AN students’ mental health. We also connect positive youth development through an indigenous perspective on youth development through the Circle of Courage.

Positive youth development (PYD) is a framework to bring greater attention to positive aspects of youth development through assets, relationships, and environments that support youth thriving, acknowledging youth as the focus of their own development. The framework indicates when youth participate in multiple meaningful relationships, contexts, and environments, positive development is enhanced (Benson, 1990, 2002; Benson et al., 2006; Lerner et al., 2011). Adolescents who have greater assets (e.g., high level of social supports, empowerment, social competence, positive identity) have lower risk of engaging in alcohol use, aggressive behaviors, and depression and have higher grades in school (Benson et al., 2011; Kang et al., 2018). Most notably, the role and function of developmental assets are relevant and important to youth from diverse communities, including youth from different racial and ethnic communities (Aspen Institute, 2018; Benson et al., 2006).

Family and community social supports benefit AI/AN students’ social, emotional, mental, and academic well-being (Benson et al., 2006). Parental support, for instance, is a positive factor in AI/AN students’ schooling (Okagaki et al., 2009), and AI/AN adolescents who have peer support are more resilient in general (Stumblingbear-Riddle & Romans, 2012). Most importantly,
social supports lower depressive symptoms, promote social and emotional well-being (Cummins et al., 1999; Sherman et al., 2011), and decrease substance use (Kulis et al., 2002). Belongingness and social connectedness are critical basic human motivations (Baumeister & Leary, 1995), particularly for AI/AN youth, where belonging to community is a significant element of identity (Brendtro et al., 2019).

In addition to family and community support, feeling safe in families, schools, and neighborhoods (Côté-Lussier & Fitzpatrick, 2016; Cummins et al., 1999; Meltzer et al., 2007) and being empowered by family warmth and connectedness are additional protective factors associated with lower mental distress and depressive symptoms (Cummins et al., 1999; Whitbeck et al., 2009). Moreover, feelings of school connectedness and having a fair, trustworthy school environment play significant roles in students’ mental health (Cummins et al., 1999).

From a PYD perspective, high quality out-of-school-time (OST) activity participation is associated with positive developmental outcomes. For instance, participation in school sports is positively associated with developmental skills and social supports and negatively associated with developmental challenges, including depression, anxiety, and other mental distress (Fraser-Thomas et al., 2005; Hosker et al., 2019; Mason et al., 2009; Van Boekel et al., 2016; Zhu et al., 2019). Participating in structured leisure activities, such as sports, arts, or youth organizations, has a positive impact on development of initiative that is an essential skill on the human development continuum through adulthood (Larson, 2000). For disadvantaged youth with mental health challenges, higher frequency of OST activity participation is associated with higher interpersonal strengths and lower internalizing problems (Abraczinskas et al., 2016).

Finally, maintaining a healthy lifestyle, including eating nutritional diets and getting enough sleep, is important for overall health and wellness. More specific to mental health, sleeping 8 to 10 hours a day on a regular basis, as recommended for teenagers, is associated with better mental and physical health (Hosker et al., 2019; Paruthi et al., 2016; Tarokh et al., 2016) and improved school outcomes (Wahlstrom, 2016). A healthy diet of regularly eating vegetables, fruits, proteins, and healthy grains, as well as limiting sugary drinks and fast foods, have significant, although small, positive associations with lower depression and anxiety (Jacka et al., 2011; Khalid et al., 2017; O’Neil et al., 2014) and are important in maintaining a healthy lifestyle (Hosker et al., 2019).
The Circle of Courage

The PYD framework primarily directed our work. However, we acknowledge an earlier form of PYD relevant for AI/AN youth, the Circle of Courage, which was introduced in 1990 by Brendtro et al. (2019; third edition), predating the introduction of positive psychology by Seligman and Csikszentmihalyi in 2000. There are meaningful connections between the Circle of Courage and PYD frameworks. The Circle of Courage is formulated in indigenous sacred contexts of the four directions and the medicine wheel. The four core values embodied in the Circle of Courage include belonging, mastery, independence, and generosity.

The spirit of belonging transcends kinship (where kinship is more than biology) and encompasses the recognition of interdependence, not only among people, but all living things, the environment, and Earth. Belonging to community is a significant element of identity. Notions of belonging are similar to PYD concepts of family and community support.

The spirit of mastery is realized through meaningful and appropriate opportunities to learn, to achieve competencies, and to become a model for others. Achievement motivation is essential for positive cognitive, social, emotional, physical, and spiritual competence. In PYD, mastery is developed through supports from family, community, teachers, and schools. Many youth develop important skills through participation in OST activities, particularly those that are culturally grounded.

The spirit of independence includes not only autonomy, but self-control, self-confidence, and shared responsibility. In contrast, mainstream cultural notions of independence focus on assertiveness, competition, and individualism that may lead to a sense of powerlessness, learned helplessness, disengagement, and alienation. In PYD, the related concept of empowerment rests on a sense of safety at home, school, and community; feeling appreciated; and having responsibilities and meaningful roles in the family. Independence is developed through multiple support systems and engagement in meaningful OST activities.

The spirit of generosity is presented as the highest virtue in many indigenous legends and stories; “it is mapped in our genes” (Brendtro et al., 2019, p. 25). When adults give to others in need, children and youth participate in generosity. In PYD, generosity is exemplified through service-learning activities and community engagement, opportunities to engage in caring for others, and promoting self-worth and community-worth by serving others.

Therefore, the Circle of Courage is, in part, characterized in this study through the inclusion of indicators for tribal membership, teacher and school support, family and community support,
empowerment, and participation in OST activities, as well as self-care through healthy diets and sleep, all elements of PYD.

Study Purpose

The purpose of this study was to estimate the strength of associations between mental distress and demographic characteristics, risk factors, risky behaviors, and protective factors. In addition, the effects of risk factors and risky behaviors was examined in the presence of protective factors including social support measures, OST activity participation, and healthy behaviors, from a PYD framework. Four research questions were posed:

1. To what extent are student characteristics associated with mental distress?
2. To what extent are risk factors and risky behaviors associated with mental distress (beyond demographics)?
3. To what extent are developmental supports and positive assets associated with mental distress (beyond demographics)?
4. To what extent are demographics, risk factors and risky behaviors, and developmental supports and positive assets simultaneously associated with mental distress?

METHODS

Instrument

The data were from the 2019 Minnesota Student Survey ([MSS], Minnesota Department of Education, 2019), designed by the Departments of Education, Health, Human Services, and Public Safety, administered triennially and anonymously to fifth, eighth, ninth, and eleventh grade public-school students. The purpose of the MSS is to monitor trends in students’ well-being, developmental skills and supports, and positive and risky behaviors. Fifth grade students were not asked questions regarding mental health, thus were excluded.

The MSS Interagency Team provided the researchers access to the survey database for secondary data analyses, as part of a larger research program investigating the ecologies of PYD (Minnesota Youth Development Research Group, n.d.), with institutional review board approval.
Participants

Participants included 3,736 AI/AN students in eighth (38%), ninth (38%), and eleventh (24%) grade, where 53% identified themselves as female and 34% lived in the Twin Cities metropolitan area. The mean age was 14.7 ($SD = 1.3$). About 60% of AI/AN students reported experiencing mental distress, although much higher among females (71%) than males (48%). Students could select all racial/ethnic categories to which they identified. Accordingly, 30% of the AI/AN participants reported only AI/AN identification, and 70% identified with multiple racial/ethnic groups. The most common combination included White (44%), followed by Black (4%), other (5%), or combinations of Asian, Black, White, and Latino (18%). Additionally, three options for tribal affiliation were available; students identified themselves as Anishinaabe/Ojibwe (51%) and Dakota/Lakota (17%), the two largest tribal communities in Minnesota, with the remaining in the other tribal affiliation category (34%).

Measures

All study variables, associated items from the MSS, and response options for each item are listed in Appendix Table A1.

Mental Distress

Mental distress was measured in the MSS (Rodriguez, 2017) as a severe form of mental distress, including having long-term mental health, behavioral, or emotional problems; having been treated for mental health, emotional, or behavioral problems; having considered or attempted suicide; or purposefully hurting or injuring oneself. The dichotomous mental distress indicator identified students who reported experiencing at least one instance of severe mental distress. AI/AN youth had the largest percentage (60%) with mental distress, followed by multiracial/ethnic students (48%), Latino students (46%), White students (40%), Black students (37%), and Asian students (34%).

Demographics

Demographic variables included age, sex (male as reference group), and participation in free/reduced priced lunch (a proxy for low SES). Racial identification was grouped into five categories with AI/AN-only as the reference group, including AI/AN-White, AI/AN-Black, AI/AN with other races/ethnicities (Asian-Pacific Islander, Latino), and AI/AN-multiple races/ethnicities (more than two). Tribal affiliation was grouped into three categories: Anishinaabe/Ojibwe, Dakota/Lakota, and other tribal affiliation (reference group).
**Risk Factors**

Trauma, a dichotomous variable, indicated students who reported they had experienced at least one trauma event, consistent with the Adverse Childhood Experiences used by the CDC (2020; see Table A1 in Appendix). Being bullied was a continuous measure (based on 14 items; see Table A1 in Appendix).

**Risky Behaviors**

Substance use, a dichotomous variable, indicated students who reported they used alcohol, marijuana, or other drugs at least once during the last 12 months. Skipping school, a dichotomous variable, indicated students who reported they missed at least one full day of school during the last 30 days without an excuse.

**Social Support**

Family/community support, sense of empowerment (Empowerment from the Search Institute [2013] Developmental Asset Profile), and teacher/school support were continuous measures of social supports created based on students’ self-reported responses to the relevant items (see Table A1 in Appendix).

Two primary sources of validity evidence for MSS measures included content-related evidence (documented in Benson, 1990, 2002; Benson et al., 2006; Search Institute, 2013) and construct-related evidence obtained from 2013, 2016, and 2019 MSS data (Rodriguez, 2017). To support construct-related inferences, the internal structure of the measures was evaluated through confirmatory factor analysis (CFA; using Mplus v.7; Muthén & Muthén, 2012). Overall, the fit indices, factor loadings, and correlations supported the use of these items as indicators of developmental support measures (Rodriguez, 2017). The support measures were scored using the partial credit Rasch model (Masters, 1982) in Winsteps 4.4.7 (Linacre, 2019). Each continuous measure was standardized with a minimum score of zero for analysis.

**Out-of-school-time (OST) Activity Participation**

Students were asked how many days in a typical week they participate in any of six categories of OST activities (see Table A1 in Appendix). The OST activity participation was an indicator of participating in one or more OST activities at least three times a week.

**Nutrition and Sleep**

Healthy dieter was a dichotomous indicator for students who reported to eat fruit and vegetables at least 4 times in the last 7 days. Similarly, healthy sleeper was a dichotomous indicator
for students who reported to sleep at least 8 hours in a typical school night (based on recommendations of the American Academy of Sleep Medicine; Paruthi et al., 2016).

**Statistical Analysis**

We first examined frequencies and descriptive statistics of each variable (Tables 1 and 2), as well as intercorrelations among variables (Table A2 in Appendix). The study has a cross-sectional design where magnitude of associations were examined. We employed four logistic regression models to answer each of the research questions. Accordingly, in the first model, odds of having mental distress was examined as a function of student characteristics only. In Model 2, risk factors and risky behaviors, and in Model 3, protective factors (social supports, OST activity participation, and healthy behaviors), were added separately in addition to the student characteristics. Finally, all the study variables were examined in Model 4 (full model). Since the outcome measure, mental distress, was dichotomous, the logistic regression coefficient was the estimated change in the log-odds of experiencing mental distress, due to the presence of a student characteristic or one-unit change in the value of the continuous variables (Szumilas, 2010).

The exponential function of the regression coefficients correspond to the odds ratio (OR) of having experienced mental distress. ORs provide relative odds of having experienced mental distress. Accordingly, the adjusted OR equals the ratio of having experienced mental distress to not having experienced mental distress, conditioned on an explanatory variable, or when controlling others. For each logistic regression model, OR and 95% confidence intervals were reported. We presented McFadden’s Pseudo-$R^2$ (an approximation of the proportion of variance explained by explanatory variables appropriate for logistic regression; Smith & McKenna, 2013) and Akaike Information Criterion (AIC; Bozdogan, 1987) for each model for model comparison.

**RESULTS**

**Descriptive Statistics**

The frequencies and descriptive statistics of each variable used in this study were reported in Table 1 and Table 2, by mental distress status. In addition, we reported the OR of having experienced mental distress given each explanatory variable independently (relative to the reference group). These are unadjusted ORs, examining the effect of each group characteristic or
lowest level of each continuous variable (age, being bullied, family/community support, sense of empowerment, teacher/school support).

Table 1 shows the frequency and proportion distributions of the levels of given categorical explanatory variables. The ORs for categorical variables indicate change in OR for the remaining groups relative to the reference category. Table 2 contains continuous explanatory variables and shows their means and standard deviations. Accordingly, being bullied, family/community support, sense of empowerment, and teacher/school support were centered so that minimum value is 0 with $SD = 1.0$. The OR for age is the change in OR for each additional year of age. For being bullied, family/community support, sense of empowerment, and teacher/school support, ORs represent the change in odds of having experienced mental distress for a one $SD$ increase in the measure score.

### Table 1

Frequencies and Proportions of the Levels of Categorical Explanatory Variables as a Function of Mental Distress Status and Independent Bivariate Logistic Regression Results

|                          | Not experiencing mental distress ($n = 1503, 40\%$) | Experiencing some mental distress ($n = 2233, 60\%$) | Logistic regression odd ratios |
|--------------------------|----------------------------------------------------|-----------------------------------------------------|--------------------------------|
|                          | $n$ | %    | $n$ | %    | OR | 95% CI                |
| **Demographics**         |     |      |     |      |    |                       |
| Free/reduced priced lunch|     |      |     |      |    |                       |
| No (reference)           | 759 | 48   | 839 | 52   | 1.70*** | [1.49, 1.95]          |
| Yes                      | 744 | 35   | 1394| 65   |            |                       |
| **Gender**               |     |      |     |      |    |                       |
| Male (reference)         | 925 | 52   | 847 | 48   | 2.62*** | [2.29, 3.00]          |
| Female                   | 578 | 29   | 1386| 71   |            |                       |
| **Race**                 |     |      |     |      |    |                       |
| AI/AN (reference)        | 472 | 42   | 638 | 58   | 1.07     | [0.91, 1.24]          |
| AI/AN-White              | 670 | 41   | 966 | 59   | 0.85     | [0.60, 1.20]          |
| AI/AN-Black              | 68  | 47   | 78  | 53   | 0.87     | [0.63, 1.21]          |
| AI/AN-other              | 77  | 46   | 91  | 54   | 1.58***  | [1.29, 1.93]          |
| AI/AN-multi              | 216 | 32   | 460 | 68   |            |                       |
| **Tribe**                |     |      |     |      |    |                       |
| Other (reference)        | 564 | 40   | 832 | 60   | 1.02     | [0.89, 1.17]          |
| Anishinaabe/Ojibwe       | 740 | 40   | 1107| 60   | 1.06     | [0.88, 1.27]          |
| Dakota/Lakota            | 199 | 40   | 294 | 60   | 3.81***  | [3.31, 4.39]          |
| **Risk factors**         |     |      |     |      |    |                       |
| Trauma                   |     |      |     |      |    |                       |
| No (reference)           | 808 | 61   | 522 | 39   |            |                       |
| Yes                      | 695 | 29   | 1711| 71   |            |                       |

*continued on next page*
Table 1 Continued
Frequencies and Proportions of the Levels of Categorical Explanatory Variables as a Function of Mental Distress Status and Independent Bivariate Logistic Regression Results

|                        | Not experiencing mental distress | Experiencing some mental distress | Logistic regression odd ratios |
|------------------------|----------------------------------|----------------------------------|-------------------------------|
|                        | n      | %     | n      | %     | OR    | 95% CI  |
| **Risky behaviors**    |        |       |        |       |       |         |
| Substance use          |        |       |        |       |       |         |
| No (reference)         | 1151   | 52    | 1045   | 48    |       |         |
| Yes                    | 352    | 23    | 1188   | 77    | 3.72***| [3.22, 4.30]|
| Skip school or class   |        |       |        |       |       |         |
| No (reference)         | 629    | 47    | 711    | 53    |       |         |
| Yes                    | 874    | 36    | 1522   | 64    | 1.54***| [1.35, 1.76]|
| **Protective factors** |        |       |        |       |       |         |
| Out-of-school-time activities |    |       |        |       |       |         |
| No (reference)         | 659    | 34    | 1252   | 66    |       |         |
| Yes                    | 844    | 46    | 981    | 54    | 0.61***| [0.54, 0.70]|
| Healthy diet           |        |       |        |       |       |         |
| No (reference)         | 782    | 38    | 1292   | 62    |       |         |
| Yes                    | 721    | 43    | 941    | 57    | 0.79***| [0.69, 0.90]|
| Healthy sleep          |        |       |        |       |       |         |
| No (reference)         | 916    | 34    | 1738   | 66    |       |         |
| Yes                    | 587    | 54    | 495    | 46    | 0.44***| [0.38, 0.51]|

Note. *p < .05. **p < .01. ***p < .001.

Table 2
Means and Standard Deviations of Continuous Explanatory Variables as a Function of Mental Distress Status and Independent Bivariate Logistic Regression Results

|                        | Not experiencing mental distress | Experiencing some mental distress | Logistic regression odd ratios |
|------------------------|----------------------------------|----------------------------------|-------------------------------|
|                        | M      | SD    | M      | SD    | OR    | 95% CI  |
| **Demographics**       |        |       |        |       |       |         |
| Age                    | 14.6   | 1.27  | 14.7   | 1.26  | 1.06* | [1.01, 1.12]|
| **Risk factors**       |        |       |        |       |       |         |
| Being bullied          | 0.85   | 0.90  | 1.57   | 0.96  | 2.19***| [2.03, 2.36]|
| **Protective factors** |        |       |        |       |       |         |
| Family/community support | 3.14   | 0.96  | 2.43   | 0.92  | 0.46***| [0.42, 0.49]|
| Empowerment            | 3.81   | 0.97  | 3.04   | 0.89  | 0.42***| [0.39, 0.45]|
| Teacher/school support | 3.24   | 0.97  | 2.76   | 0.97  | 0.60***| [0.56, 0.65]|

Note. *p < .05. **p < .01. ***p < .001.
Logistic Regression Results

Logistic regression models in Table 3 correspond to each research question; all of the ORs in Table 3 are adjusted ORs, conditioned on the other variables within the model. Regarding demographic variables, age (OR = 1.09), participation in free/reduced priced lunch (OR = 1.79), and being female (OR = 2.60) were positively associated with higher odds of mental distress (Model 1). For example, the odds of having mental distress for females was 2.6 times greater than males, conditioned on other student characteristics in the model. Furthermore, students who identified as AI/AN-White (OR = 1.18) or AI/AN with multiple racial/ethnic combination (OR = 1.54) had higher odds of mental distress than students who identified as AI/AN only, the reference group. For other AI/AN mixed race/ethnicity groups, the odds of having mental distress were not significantly different than AI/AN-only students (possibly due to smaller group size). Regarding tribal identity, the odds of having mental distress for students who identified as Anishinaabe/Ojibwe and Dakota/Lakota were not different than those with other tribal affiliation.

For Model 2, both risk factors (experiencing trauma and being bullied) and risky behaviors (substance use and skipping school) were associated with higher odds of having mental distress, when controlling for demographic characteristics of students. According to Model 2, experiencing trauma (OR = 2.42) and being bullied by peers (OR = 1.85) were strongly associated with experiencing mental distress. In other words, according to Model 2 results, the odds of having mental distress were 2.42 times and 1.85 times greater for students who experienced trauma and were being bullied, respectively, conditioned on other variables in the models. In addition, the odds of having mental distress were 2.33 times greater for students using any substance (cigarette, alcohol, drug, etc.) compared to students not using substances, and 1.18 times greater for students who skipped school or class than ones who did not, controlling for other variables in the model. Regarding protective factors, and specifically social supports (Model 3), family/community support (OR = 0.70) and sense of empowerment (OR = 0.57) were associated with lower ORs of mental distress. However, teacher/school support (OR = 1.00) was not associated with the likelihood of experiencing mental distress, when controlling for other variables in the model. Accordingly, one SD increase in family/community support was associated with 0.70 times the odds and one SD increase in sense of empowerment was associated with 0.57 times the odds of experiencing mental distress; more family/community support and sense of empowerment was associated with substantially lower likelihood of experiencing mental distress.
Similarly, we examined the association of OST activity participation, healthy diet, and healthy sleep with mental distress. When controlling for other variables in the model, OST activity participation \((OR = 0.82)\) and healthy sleep \((OR = 0.73)\) were associated with lower odds of experiencing mental distress; however, healthy diet was not statistically significantly associated with mental distress. It should be noted that this does not mean eating healthy was not associated with mental distress, rather as shown in Table 1, it was associated with significantly lower odds of having mental distress \((OR = 0.79)\). However, when the effects of other variables were included in the model, healthy diet no longer explained significant incremental variation in the odds of having mental distress.

In addition, we examined the proportion of explained variance as a measure of goodness of fit that shows how well the variation in dependent variable is explained approximately by the model. Accordingly, McFadden \(R^2\) showed the increase in variance explained was about .14 when adding risk factors, or there was about .10 additional explained variance when adding protective factors above demographics. Finally, in Model 4, all variables were examined simultaneously, risk and protective factors together explain even more variance (.18) above demographics. Similarly, AIC suggested Model 4 had better model-data fit compared to other models.

Relative to the other models, in Model 4, skipping school \((OR = 1.12)\) was no longer significantly associated with mental distress, and teacher/school support \((OR = 1.15)\) was significantly associated with mental distress in the unexpected direction. Teacher/school support counterintuitively predicted a slightly higher likelihood of mental distress.

In Model 4, we observed slight changes in most ORs relative to Model 2, which did not include the protective factors. The negative effects of being female, being older adolescent, and having low SES were slightly smaller, and the ORs associated with risk factors and risky behaviors were smaller, especially with trauma. Without the inclusion of protective factors, the OR for mental distress associated with trauma experiences was 2.42; with protective factors the OR was 1.90. In the presence of the few protective factors included in this model, the adjusted odds of experiencing mental distress being associated with experiencing trauma was reduced by about 37% \((2.42 \div 1.90)\). Similarly, the adjusted odds of experiencing mental distress being associated with being bullied and substance use were reduced by about 18% and 15%, respectively, comparing Model 4 to Model 2.
### Table 3

Logistic Regression Results Predicting Mental Distress

| Variables               | Model 1  |         | Model 2  |         | Model 3  |         | Model 4  |         |
|-------------------------|----------|---------|----------|---------|----------|---------|----------|---------|
|                         | OR       | 95% CI  | OR       | 95% CI  | OR       | 95% CI  | OR       | 95% CI  |
| **Demographics**        |          |         |          |         |          |         |          |         |
| Age                     | 1.09**   | [1.03, 1.15] | 1.09**   | [1.03, 1.16] | 1.06*   | [1.02, 1.16] | 1.08*   | [1.01, 1.15] |
| Free/reduced priced lunch | 1.79*** | [1.55, 2.06] | 1.49*** | [1.27, 1.75] | 1.49*** | [1.15, 1.60] | 1.32** | [1.12, 1.56] |
| Female                  | 2.60*** | [2.26, 2.98] | 2.23*** | [1.91, 2.59] | 2.21*** | [1.79, 2.45] | 2.10*** | [1.79, 2.46] |
| Race                    |          |         |          |         |          |         |          |         |
| AI/AN-White             | 1.18*   | [1.00, 1.40] | 1.24*   | [1.03, 1.49] | 1.20*   | [1.01, 1.47] | 1.25*   | [1.03, 1.51] |
| AI/AN-Black             | 0.72     | [0.50, 1.04] | 0.71    | [0.47, 1.05] | 0.77    | [0.49, 1.11] | 0.78    | [0.52, 1.17] |
| AI/AN-other             | 0.74     | [0.53, 1.04] | 0.73    | [0.50, 1.07] | 0.68*   | [0.47, 1.04] | 0.71    | [0.48, 1.05] |
| AI/AN-multi             | 1.54*** | [1.24, 1.91] | 1.44**  | [1.14, 1.83] | 1.52*** | [1.16, 1.88] | 1.50**  | [1.17, 1.92] |
| Tribe                   | 0.97     | [0.84, 1.12] | 0.88    | [0.75, 1.03] | 0.91    | [0.74, 1.03] | 0.87    | [0.74, 1.03] |
|                         | 1.08     | [0.90, 1.31] | 0.98    | [0.79, 1.21] | 0.98    | [0.77, 1.18] | 0.95    | [0.76, 1.18] |
| **Risk factors/behaviors** |        |         |          |         |          |         |          |         |
| Trauma                  | 2.42*** | [2.06, 2.85] |         |          | 1.90*** | [1.61, 2.26] |         |          |
| Being bullied           | 1.85*** | [1.70, 2.00] |         |          | 1.70*** | [1.56, 1.86] |         |          |
| Substance use           | 2.33*** | [1.98, 2.75] |         |          | 2.13*** | [1.79, 2.53] |         |          |
| Skip school or class    | 1.18*   | [1.01, 1.39] |         |          | 1.12    |         |         |          |
| **Protective factors**  |          |         |          |         |          |         |          |         |
| Family/community support| 0.70*** | [0.67, 0.84] | 0.77*** | [0.69, 0.86] |         |          |         |          |
| Empowerment             | 0.57*** | [0.57, 0.71] | 0.66*** | [0.59, 0.73] |         |          |         |          |
| Teacher/school support  | 1.00     | [1.04, 1.26] | 1.15**  | [1.04, 1.26] |         |          |         |          |
| Out-of-school-time activities | 0.82** | [0.61, 0.84] | 0.71*** | [0.61, 0.84] |         |          |         |          |
| Healthy diet            | 1.12     | [0.93, 1.29] | 1.09    | [0.93, 1.29] |         |          |         |          |
| Healthy sleep           | 0.73*** | [0.68, 0.96] | 0.81*   | [0.68, 0.96] |         |          |         |          |
| **Model fit**           |          |         |          |         |          |         |          |         |
| Model loglikelihood     | -2369.317 |         | -2015.542 |         | -2100.143 |         | -1911.440 |         |
| Null model loglikelihood | -2517.817 |         | -2517.817 |         | -2517.817 |         | -2526.198 |         |
| McFadden R²             | .059     |         | .199     |         | .166     |         | .241     |         |
| AIC                     | 4758.6   |         | 4059.1   |         | 4232.3   |         | 3862.9   |         |

*Note.* Age was centered so that minimum value is 0. Being bullied, Family/community support, Empowerment, and Teacher/school support were centered so that minimum value is 0 with SD=1.0. OR = adjusted odds ratio. *p < .05. **p < .01. ***p < .001.
DISCUSSION

For the first research question, we examined the associations between AI/AN students’ background variables and mental distress. We found that AI/AN students who are older, lower SES, and female have higher likelihoods of mental distress. Additionally, students who identify as AI/AN-White and AI/AN with multiple racial/ethnic combinations have higher likelihoods of mental distress than students who identify as AI/AN only (reference group), although students identifying as AI/AN (regardless of other race/ethnicities) do report higher likelihoods of mental distress than students who do not identify as AI/AN. This increased likelihood of mental distress could reflect a history of trauma, colonization, and assimilation. That is, this history may impact how students perceive the extent to which they belong to their educational and social environments (Baumeister & Leary, 1995), as one example, that subsequently contributes to their likelihood of mental distress. The complexity introduced by multi-racial AI/AN students and AI/AN-White students likely indicates the struggles students with multiracial backgrounds face that may present conflicting ways of knowing or being, greater exclusion or isolation, and unique forms of discrimination (Sanchez, 2010; Shih & Sanchez, 2005). However, empirical research on multiracial AI/AN youth is sparse.

From the second research question, we found that risk factors, particularly trauma, are significantly associated with higher likelihood of mental distress. Risky behaviors, including substance use and skipping school, are also associated with higher likelihood of mental distress; simultaneously, risky behaviors are possibly the result of mental distress (bidirectional associations; Kang et al., 2018). These results were expected.

When the protective factors were added into the full model, the magnitudes of the risk factors each dropped, and skipping school was no longer statistically significant. This is the major set of findings: adding protective factors in the model of student characteristics and risk factors and behaviors reduced the likelihood of experiencing mental distress and reduced the negative accumulating effects of risk factors.

Furthermore, we observed that teacher/school support counterintuitively predicted a slightly higher likelihood of mental distress in the full model. We consider two possible explanations for this result. First, we see that the bivariate correlations for family/community support, sense of empowerment, and teacher/school support with mental distress are all negative (Table A2 in Appendix). One explanation is that the partial correlation of teacher/school support
with mental distress, controlling for family/community support and sense of empowerment, is positive. Another possibility is that once we account for family/community support and sense of empowerment, the remaining variance could be due to students who have more mental distress and are seeking out more support from teachers and school personnel (teacher/school support). This finding is important and could serve to highlight the discrepancies between roles of various sources of social support. This deserves further study.

In this quantitative study, we aimed to contribute to AI/AN youth development and mental health programming to promote PYD practices in a way that is consistent with indigenous perspectives of youth development. The Circle of Courage provides a foundation for psychological resilience for Native youth, particularly youth at-risk (Brendtro, 2020; Werner, 2012). For instance, Werner (2012) explained that youth with disadvantaged backgrounds can gain resiliency and thrive in life in conjunction with the elements of the Circle of Courage. Accordingly, the belonging element portrays that youth with adverse life events gain resiliency and thrive in life, with help of social support from peers, extended family members, or community. Mastery element of the Circle of Courage is realized by providing opportunities to youth to feel valued, appreciated, and competent by encouraging sense of empowerment and OST activity participation that also motivates youth to have a purpose in life. Similarly, sense of empowerment, OST activity participation, and self-care through healthy lifestyle can help youth to acquire independence and self-discipline. Lastly, with feelings of belongingness through social supports and OST activity participation, sense of responsibility in a partnership with others is enhanced, reflecting the generosity element of the Circle of Courage.

**Limitations**

There are some limitations for this study. The first limitation is the focus on AI/AN students in Minnesota, and although the sample includes over 3,700 students, generalizability beyond Minnesota should be done cautiously. Also, in the case of multi-racial AI/AN students, sample sizes were small for some groups. For example, although the ORs were different than 1.0 with AI/AN-Black students for each model, they were not statistically significant (likely due to low power). In addition, there may be a differential threshold for students whose bi-cultural identities are both stigmatized compared to students with only one stigmatized identity, or the two cultures are in conflict. Finally, although the MSS did allow students to identify with Anishinaabe/Ojibwe
and Dakota/Lakota tribal affiliations (the largest groups attending Minnesota schools), one-third of students selected other tribe with unknown affiliation.

Since the measures and variables used in the study were based on self-reported responses to the survey items, it should be noted that respondents may tend to be more biased to the items related to negative experiences. Therefore, self-report bias may mask the real magnitude of the associations (Devaux & Sassi, 2015; Krumpal, 2013; Latkin et al., 2017).

CONCLUSION

The socio-cultural and educational contexts for AI/AN students are complex and their mental health outcomes are unacceptable, which begets the need to expand on and increase research activities in this student community. Bivariate associations and correlations are insufficient and do not uncover the whole picture. Risk factors and risky behaviors are consistently associated with mental distress across AI/AN student groups. But most importantly, not only do protective factors reduce the likelihood of mental distress, they also reduce the negative effects of risk factors and behaviors. Educators, counselors, and youth workers can use this information to structure curriculum and after school programs, learning supports, therapy practices, and developmental opportunities, to better support the needs of these students, specifically through better understanding of the events and contexts that contribute to students’ elevated mental distress levels. de Heer et al. (2020), and many others (McKinley et al., 2019, Shane et al., 2018), point to the value of collaborations among researchers and practitioners; this is a good place to demonstrate that recommendation.

Social supports reduce the likelihood of mental distress among AI/AN students, particularly family/community support and sense of empowerment. In fact, in the context of such supports, the negative effects of risk factors and behaviors are reduced, particularly the negative effects of experiencing trauma. These findings can equip practitioners with the knowledge to further support AI/AN students, specifically, through a better understanding of which social supports are at play and the importance of context, such as home and school environments. The Circle of Courage, as an indigenous PYD framework, is more than a philosophy; it represents core values for education and youth work in ways that are consistent with our findings. Leveraging the assets, positive supports, and elements reflected in the Circle of Courage, practitioners and policy makers can be better equipped to promote positive mental health among AI/AN students.
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CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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### APPENDIX

**Table A1**  
**Study Variables and Associated Items in MSS 2019**

| Name of variable | Items used to create the variable | Variable construction method |
|------------------|-----------------------------------|------------------------------|
| Mental Distress  | • Do you have any long-term mental health, behavioral or emotional problems? Long-term means lasting 6 months or more.  
• Have you ever been treated for a mental health, emotional or behavioral problem (during the last year or more than a year ago)?  
• During the last 12 months, how many times did you do something to purposely hurt or injure yourself without wanting to die, such as cutting, burning or bruising yourself on purpose? * not Y/N  
• Have you ever seriously considered attempting suicide (during the last year or more than a year ago)?  
• Have you ever actually attempted suicide (during the last year or more than a year ago)?  
| Choices: Yes, No | | **dichotomous variable** |
|                 | 1=Yes, if Yes item choice is selected at least for one question; 0=No, otherwise. |

| Trauma          | • Do you live with anyone who drinks too much alcohol?  
• Do you live with anyone who uses illegal drugs or abuses prescription drugs?  
• Does a parent or other adult in your home regularly swear at you, insult you or put you down?  
• Has a parent or other adult in your household ever hit, beat, kicked or physically hurt you in any way?  
• Have your parents or other adults in your home ever slapped, hit, punched or beat each other up?  
• Has any older or stronger member of your family ever touched you or had you touch them sexually?  
• Have any of your parents or guardians ever been in jail or prison?  
• During the past 12 months, have you stayed in a shelter, somewhere not intended as a place to live, or someone else’s home because you had no other place to stay (on your own without any adult family members or with an adult family member)?  
| Choices: Yes, No | | **dichotomous variable** |
|                 | 1=Yes, if Yes item choice is selected at least for one question; 0=No, otherwise. |
| Name of variable | Items used to create the variable | Variable construction method |
|------------------|----------------------------------|-----------------------------|
| **Being bullied (victim)** | During the last 30 days, how often have other students harassed or bullied you for any of the following reasons?  
- Your race, ethnicity or national origin  
- Your religion  
- Your gender  
- Because you are gay or lesbian or because someone thought you were  
- A physical or mental disability  
- Your weight or physical appearance  
During the last 30 days, how often have you been bullied through e-mail, chat rooms, instant messaging, websites or texting?  
During the last 30 days, how often have other students at school...  
- pushed, shoved, slapped, hit or kicked you when they weren’t kidding around?  
- threatened to beat you up?  
- spread mean rumors or lies about you?  
- made sexual jokes, comments or gestures towards you?  
- excluded you from friends, other students or activities?  
Choices: *never, once or twice, about once a week, several times a week, every day* | continuous variable  
created by partial credit  
Rasch model |
| **Family/ community support** | Can you talk to your mother about problems you are having?  
Choices: *yes, most of the time; yes, some of the time; no, not very often; no, not at all; my mother is not around*  
- Your parents care about you.  
- Other adult relatives care about you.  
- Friends care about you.  
- Adults in your community care about you.  
Choices: *not at all, a little, some, quite a bit, very much* | continuous variable  
created by partial credit  
Rasch model |
| Name of variable | Items used to create the variable | Variable construction method |
|------------------|----------------------------------|------------------------------|
| Empowerment      | • I feel safe at school.          | continuous variable          |
|                  | • I feel safe in my neighborhood. |                              |
|                  | • I feel safe at home.           |                              |
|                  | Choices: *strongly disagree, disagree, agree, strongly agree* |                              |
|                  | • I feel valued and appreciated by others. |                              |
|                  | • I am included in family tasks and decisions. |                              |
|                  | • I am given useful roles and responsibilities. |                              |
|                  | Choices: *not at all or rarely, somewhat or sometimes, very of often, extremely or almost always* |                              |
| Teacher/school support | • Overall, adults at my school treat students fairly. | continuous variable          |
|                  | • Adults at my school listen to the students. |                              |
|                  | • The school rules are fair. | created by partial credit Rasch model |
|                  | • At my school, teachers care about students. |                              |
|                  | • Most teachers at my school are interested in me as a person. |                              |
|                  | • Teachers/other adults at school care about you. |                              |
|                  | Choices: *strongly disagree, disagree, agree, strongly agree* |                              |
| OST activity participation (at least 3 times/week) | During a typical week, how often do you participate in each of the following activities outside of the regular school day | dichotomous variable 1=Yes, if student participates in any activities a total of at least three times a week; 0=No, otherwise |
|                  | • Sports teams, such as park and rec teams, school teams, in-house teams or traveling teams |                              |
|                  | • School sponsored activities or clubs that are not sports, such as drama, music, chess or science club |                              |
|                  | • Leadership activities such as student government, youth councils or committees |                              |
|                  | • Other community clubs such as 4-H, Scouts, Y-clubs or Community Ed? |                              |
|                  | • Artistic lessons, such as music or dance |                              |
|                  | • Physical activity lessons, such as tennis or karate |                              |
|                  | Choices: *0 days, 1 day, 2 days, 3 to 4 days, 5 or more days* |                              |
Table A2

Intercorrelations Among the Study Variables

|       | MD  | age | low SES | sex | race | tribe | trauma | subs. use | skip school | FCS | EM | TSS | OST activ. | diet |
|-------|-----|-----|---------|-----|------|-------|--------|-----------|-------------|-----|----|-----|------------|------|
| age   | 0.05| 1.00|         |     |      |       |        |           |             |     |    |     |            |      |
| low SES | 0.20| -0.08| 1.00   |     |      |       |        |           |             |     |    |     |            |      |
| sex   | 0.36| -0.02| 0.08   | 1.00|      |       |        |           |             |     |    |     |            |      |
| race  | 0.06| -0.09| 0.10   | 1.00|      |       |        |           |             |     |    |     |            |      |
| tribe | 0.01| 0.19 | 0.06   | -0.23| 1.00|       |        |           |             |     |    |     |            |      |
| trauma| 0.48| 0.35 | 0.15   | -0.05| 0.13| 1.00  |        |           |             |     |    |     |            |      |
| BD    | 0.45| -0.11| 0.08   | 0.20| 0.06 | -0.03 | 0.31   | 1.00      |             |     |    |     |            |      |
| subs. use | 0.47| 0.16 | 0.07   | 0.15| 0.04 | 0.07  | 0.46   | 0.31      | 1.00        |     |    |     |            |      |
| skip school | 0.16| 0.04 | 0.14   | 0.10| -0.04| 0.13  | 0.16   | 0.10      | 0.20        | 1.00|    |     |            |      |
| FCS   | -0.44| -0.02| -0.17  | -0.17| -0.03| -0.05 | -0.42  | -0.32     | -0.31       | -0.12| 1.00|    |            |      |
| EM    | -0.48| 0.00 | -0.18  | -0.22| -0.02| -0.03 | -0.41  | -0.36     | -0.32       | -0.14| 0.65| 1.00|            |      |
| TSS   | -0.30| -0.01| -0.06  | -0.19| -0.02| -0.07 | -0.29  | -0.31     | -0.30       | -0.18| 0.54| 0.51| 1.00       |      |
| OST activ. | -0.19| -0.04| -0.24  | 0.00 | 0.04 | -0.06 | 0.40   | -0.09     | -0.12       | 0.24| 0.23| 0.13| 1.00       |      |
| diet  | -0.09| -0.02| -0.15  | 0.02 | 0.01 | -0.08 | -0.16  | -0.01     | -0.09       | -0.06| 0.20| 0.23| 0.14       | 0.25|
| sleep | -0.30| -0.16| -0.05  | -0.15| -0.03| -0.04 | -0.26  | -0.16     | -0.30       | -0.18| 0.34| 0.35| 0.27       | 0.12|

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