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Developmental Assets and Risky Sexual Behaviors among American Indian Youth

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Abstract

This study examined the relationship between developmental assets during early and mid-adolescence and early adult sexual behaviors among American Indians using a subsample from the National Longitudinal Study of Adolescent Health ($N = 465$). Grounded in an assets framework, the authors explored the protective role of personal, family, school, and community assets as well as cumulative assets for sexual behaviors including early sexual debut, number of sexual partners, and frequency of condom use. The results indicated that certain assets during early and mid-adolescence, such as self-control, family support, and school attachment were protective for various risky sexual behaviors in early adulthood. Furthermore, cumulative assets emerged as an important predictor of sexual behaviors. These findings highlight the utility of applying a developmental asset framework to understand protective factors among American Indian youth.

Studies have shown that American Indians and Alaskan Natives (AI/AN)¹ experience disproportionately high rates of sexually transmitted infections and teenage pregnancy (de Ravello, Everett Jones, Tulloch, Taylor, & Doshi, 2014; Winscott, Taylor, & Kenney, 2010). For instance, rates of chlamydia, gonorrhea, and syphilis are 1.2 to 4.3 times higher among AI/ANs than whites (Centers for Disease Control and Prevention and Indian Health Service, 2012). In addition, the birth rate among AI/AN teenagers aged 15–19 (38.7 per 1,000 people in 2010) is substantially higher than the corresponding rate among non-Hispanic whites (23.5 per 1,000) (Hamilton & Ventura, 2012). Disparities in the proximal behavioral correlates of these outcomes have been documented as well. Findings indicate that AI/AN youth are more likely to experience sexual intercourse before the age of 13 and they are more likely to have four or more sexual partners than White youth (de Ravello et al., 2014).

Despite these racial disparities, many American Indian youth make healthy decisions regarding sex by delaying sexual initiation or using condoms in order to prevent sexually transmitted infections or pregnancy. A developmental assets approach (Benson, Leffert,

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¹The Census Bureau currently defines an American Indian or Alaska Native as “a person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment.” Following this definition, we use the terms “American Indian/Alaskan Native (AI/AN)” when referencing population prevalence data and studies that explicitly include Alaskan Natives and American Indians in one category. For all other references throughout the manuscript, we use the term “American Indian” because the Add Health interview question about self-identified race specifically provided the response category of “American Indian” and those who chose this response category constitute our sample (Alaskan Native was not provided as a response option). However, we use these terms respectfully, recognizing that some individuals prefer the words Native American or other terms.

Scales, & Blyth, 1998; Leffert et al., 1998; Scales, Benson, Leffert, & Blyth, 2000) highlights the intrapersonal capabilities and nurturing environments that encourage healthy choices and avoidance of risky behaviors. Applying this framework to understand sexual behavior among American Indian early adolescents is useful given that prior research demonstrates that American Indian youth possess numerous personal, family, and community factors that are sources of strength and support in their lives (McMahon, Kenyon, & Carter, 2012).

Although prior studies have explored the correlates of risky sexual behaviors among American Indian youth, there remain important gaps in this literature. First, the few studies that have explored assets and sexual behaviors among this population typically have focused on only a few assets or sexual behaviors, rather than exploring how various assets are linked to the avoidance of risky sexual behaviors broadly (e.g., early sexual intercourse, multiple sexual partners, and infrequent condom use). Second, extant research exploring risky sexual behaviors among this group has been based almost exclusively on reservation and single-community samples, despite the fact that the majority of individuals who identify as AI/AN (78%) do not live on reservations or in tribal areas (Norris, Vines, & Hoeffel, 2012). Little is known about the predictors of sexual behavior among the many American Indians living in suburban or urban areas. And third, many national samples are cross-sectional, and thus do not explore adolescent predictors of young adult behaviors (de Ravello et al., 2014; Rutman, Park, Castor, Taulii, & Forquera, 2008; Rutman, Taulii, Ned, & Tetrick, 2012).

The current study seeks to address these gaps in the literature by applying a developmental asset approach to understand the sexual behavior of American Indian youth. Using data from the National Longitudinal Study of Adolescent Health (Add Health), we examine whether assets during early and mid-adolescence predict risky sexual behaviors during early adulthood among American Indians. Our study is grounded in the assets framework, which we discuss below.

A Developmental Assets Framework

A number of perspectives in human development—including the bioecological approach and developmental contextual approaches—argue that development occurs as a reciprocal interaction between an individual and the contexts in which he or she is embedded (Bronfenbrenner & Morris, 2006; Lerner, 1991). The study of sexual behaviors has been enhanced by applying a contextual approach, and researchers have highlighted the role of various nested systems in the development of sexual behavior, from the individual to his or her social relationships and sociocultural context (Tolman, Striepe, & Harmon, 2003).

Drawing from these approaches, as well as empirical research on childhood and adolescence, scholars at the Search Institute created a list of adolescent developmental assets (Benson et al., 1998; Leffert et al., 1998; Scales et al., 2000). The typology of developmental assets created by the Search Institute posits that assets fall into one of two categories: internal or external. Internal assets are those intrapersonal strengths possessed by the youth themselves (e.g., aspirations, self-esteem, planning and decision-making) that lead to positive development and well-being. In contrast, external assets are aspects of the youth's

environment (e.g., family, peer, and community strengths) that support and empower youth and help them to succeed. Situating these assets within the broader risk and resilience literature demonstrates that they are compensatory, because they are hypothesized to be associated negatively with risky behavior (Fergus & Zimmerman, 2005). Furthermore, assets are thought to be cumulative, with more assets associated with greater avoidance of risky behaviors, including risky sexual behavior.

Applying the Developmental Assets Framework to American Indians

In the current study, we are interested in applying an asset framework to understand risky sexual behaviors among American Indians. Exploring within-group predictors of sexual behaviors among American Indians is worthwhile given their unique cultural and historical experiences. American Indians sustained repeated traumatic experiences as a result of colonization. War and disease diminished the American Indian population during the first two centuries of colonization; however, trauma continued to be inflicted in recent centuries through various coercive policies and treaties. For instance, the Indian Removal Act of 1830 forced many American Indians—especially tribes in the Southeastern US—to relocate to designated areas in the west. In addition, misguided assimilation policies occurred throughout the 19th and much of the 20th century. The use of government-administered boarding schools, the widespread adoption/fostering of American Indian children, and inadequate freedom to practice traditional religion are just a few of the many policies and practices that limited the freedom and autonomy of American Indians and devastated tribal and familial relationship networks. The resultant isolation, forced assimilation, and deprivation from such governmental intrusion, oppression, and interference continues to foster profound social and economic challenges for American Indians today. Although a comprehensive discussion of these experiences and their consequences is not possible here (see Brave Heart & DeBruyn, 1998 for such a discussion), the consequences of this history, including such contemporary problems as chronic poverty and unemployment, severe segregation and isolation and even the feelings of depression and grief experienced by many American Indians (called historical trauma, see Brave Heart & DeBruyn, 1998) —cannot be ignored. Yet despite these challenges, American Indian youth exhibit many strengths, both internal and external (McMahon et al., 2012). In the current paper, we use a *within-group* approach to identify personal, familial, school, and community assets that protect against risky sexual behaviors within this population.

Despite the voluminous number of studies that have examined adolescent development utilizing an asset approach, only a few studies have examined the role of assets in predicting American Indian adolescent sexual behaviors. In a cross-sectional study of 484 American Indian middle and high school students attending five rural schools, Chewning and colleagues (2001) found that the health risk behaviors of friends, social support, parental monitoring, academic achievement, valuing academic achievement, and self-efficacy were associated with a variety of healthy sexual behaviors (e.g., delay of sexual debut, birth control, and condom use). Oman and colleagues (2006), in their study of 134 American Indians from two cities in Oklahoma, found that having a non-parental adult role model and high aspirations for the future were both assets that predicted abstinence. Marsiglia, Nieri, and Stiffman examined 89 sexually active American Indian adolescents and found that

family communication about HIV/AIDs acted as a protective factor against substance use during last intercourse although HIV/AIDs communication was not associated with number of sexual partners. And Mmari, Blum, and Teufel-Shone (2010) conducted focus groups at three sites and found that certain protective factors, such as parental support and the availability of mentors and role models, lowered the risk of American Indian adolescents engaging in delinquent behavior globally. Although none of the studies used national samples, and none were entirely comprehensive in their consideration of the possible assets that could protect youth from engaging in risky sexual behaviors, they do illustrate the utility of applying an asset approach to American Indian adolescents.

The Current Study

A number of scholars have called for increased attention to the intrapersonal strengths possessed by American Indian youth and the ecological strengths present in their families and communities (Baldwin, Brown, Wayment, Nez, & Brelsford, 2011; Hellerstedt, Peterson-Hickey, Rhodes, & Garwick, 2006; McMahon et al., 2012; Pavkov, Travis, Fox, King, & Cross, 2010). Thus, the purpose of the current study was to examine assets during early and mid-adolescence as predictors of sexual behaviors measured 7 or 8 years later among a national sample of American Indian youth. We explored assets in four context domains: personal, family, school/peer, and community. In addition to exploring sexual behavior as a function of individual assets within each of these contexts, we examined whether cumulative assets across all contexts predicted sexual behaviors. Our dependent variables included early sexual debut, number of lifetime sexual partners, and frequency of condom use in the past year. We controlled for factors that may influence sexual behavior including developmental characteristics (i.e., age and physical maturation) and demographic characteristics (gender, race, parental education, and family structure). By using a national longitudinal sample that includes American Indians, we extend previous work on risky sexual behavior among this population that has focused primarily on cross-sectional community samples.

Method

Data and Sample

Data for the current study came from the National Longitudinal Study of Adolescent Health (Add Health) (Harris, 2009). Add Health is a school-based probability sample that is representative of schools in the United States with regard to region, urbanicity, school size, and school type. The current study uses data from a subsample of American Indian students who completed in-home interviews at Wave 1 (in 1994/1995) and were followed longitudinally and re-interviewed at Wave 3 (2001/2002). Sensitive information in the home surveys was collected using Audio Computer-assisted Self Interviews (ACASI), whereas less sensitive information was collected using Computer-assisted Personal Interviews (CAPI). Because of our interest in early and mid-adolescence, we examined how assets measured at Wave 1 (when youth were between 12 and 16 years of age) predicted sexual behavior at Wave 3 (when youth were between 18 and 23 years of age). Our analytical sample is limited to youth aged 12–16 who self-identified as American Indian at Wave 1 (N

= 510). After omitting youth who were missing a valid Wave 1 sampling weight ($N = 54$), we had a final sample size of 456 youth. Although we used sampling weights to account for the complex survey design and an individual's probability of selection, it is important to note that our American Indian sample is not nationally representative of American Indians because Add Health did not sample any reservation schools. The schools attended by participants in the current sample were primarily in suburban and urban areas (see Table 1).

Attrition and item nonresponse resulted in missing data. Little's (1998) test was used to determine whether missing data (on the dependent variables, total assets, and covariates) were missing completely at random (MCAR). The results were significant, $\chi^2(40, N = 456) = 81.27, p < .001$, suggesting the need to reject the null hypothesis that the data were MCAR. Thus, missing data on all analytical variables were assumed to be missing at random (MAR), rather than MCAR. To maximize power and achieve less biased coefficients, we used multiple imputation to handle missing data (Graham, 2009; Johnson & Young, 2011; Schlomer, Bauman, & Card, 2010). In particular, we used multiple imputation by chained equations (MICE) using the `mi impute` command in Stata 13 (White, Royston, & Wood, 2011). The imputation equation was informed by our model variables as well as a few auxiliary sexual behavior variables. Twenty datasets were generated and subsequently combined and analyzed using the `mi estimate` command. Information from all respondents in Add Health with a valid sampling weight was used to create the imputed datasets. Subsequently, the survey command with the appropriate subpopulation command limited our analytical sample to early adolescent American Indians.

Measures

Sexual Behaviors—Sexual behaviors were measured at Wave 3 with three variables: early sexual debut, number of sexual partners, and condom use frequency. To code early sexual debut, information about the age of first vaginal intercourse was used. Respondents who initiated sexual intercourse before age 15 were compared to those who initiated sex after age 15 as well as those who had not yet initiated sex by Wave 3 (Coker et al., 1994). The number of lifetime sexual partners was measured with a question that asked, "With how many partners have you ever had vaginal intercourse, even if only once?" Young adults who had never had sex were assigned a zero. Finally, we examined the frequency with which respondents (or their partners) used a condom during sex in the past year. Respondents reported on a scale ranging from 0(*never*) to 4(*always*). These analyses excluded young adults who reported that they had not had sex in the past year ($n = 70$).

Personal, familial, school/peer, and community assets, as well as all control variables were measured at Wave 1 when respondents were between the ages of 12 and 16. Our asset measures were grounded in developmental theory and empirical literature, but constrained by the items and scales available in Add Health. Cronbach's alpha (α) was used to determine scale reliability. Descriptive statistics of the raw variables appear in Table 1; however, all assets were standardized prior to analysis.

Personal Assets—Three measures of personal assets were explored: self-esteem, self-control, and deliberative decision-making. Self-esteem was measured with four items that

assessed global self-esteem (e.g., “You have many good qualities,” “You like yourself just the way you are,” $\alpha=.77$). Items were measured on a scale from 1(*strongly agree*) to 5(*strongly disagree*) and were reverse coded and averaged (Kort-Butler & Hagewen, 2011). Consistent with prior research (Remster, 2014; Teasdale & Silver, 2009), self-control was measured with four items that captured the extent to which respondents reported exerting self-control at school (e.g., during the past year, “How often have you had: trouble paying attention at school,” and “trouble keeping your mind on what you were doing,” $\alpha=.73$). Three of these variables were measured on a scale from 1(*never*) to 5(*everyday*), but one was measured on a 1(*never/rarely*) to 4(*most/all of the time*) scale. Therefore, the items were reverse coded, standardized and averaged such that higher scores indicated more self-control. Deliberative decision-making was measured with four items including “When you have a problem to solve, one of the first things you do is get as many facts about the problem as possible,” and “When you are attempting to find a solution to a problem, you usually try to think of as many different ways to approach the problem as possible.” Items were measured on a scale from 1(*strongly agree*) to 5(*strongly disagree*), and were reverse coded and averaged ($\alpha=.75$) such that higher scores indicated more deliberative decision-making (Wolff & Crockett, 2011).

Family Assets—Family support was based on a four-item scale that determined the extent to which the adolescent received familial love and support (e.g., “How much do you feel that your parents care about you?” and “How much do you feel that people in your family understand you?” $\alpha=.78$). Items were measured on a scale from 1(*not at all*) to 5(*very much*) and were averaged such that higher scores indicated better relationships. Parent-youth communication was based on two items that asked respondents whether they were satisfied with the way that they communicated with their mom and their dad on a scale from 1(*strongly agree*) to 5(*strongly disagree*). These items were reverse coded and averaged. Parental expectations were measured with four questions that asked respondents to identify the extent to which their mom and their dad would be disappointed if they did not graduate from high school or college on a scale from 1(*low*) to 5(*high*). Importantly, youth answered questions about parental communication and parental expectations in response to their relationships with resident parents or resident parent-figures (i.e., stepparents, grandparents). Scores for single-parent families are based on relationships and communication with the one resident parent.

School and Peer Assets—School connectedness was measured with five items that captured the extent to which students felt safe, happy, and close to people at their school on a scale from 1(*strongly agree*) to 5(*strongly disagree*) ($\alpha=.77$) (McNeely, Nonnemaker, & Blum, 2002). We measured the variable non-deviant friends with three questions that asked respondents to report the extent to which their three best friends smoked at least one cigarette a day, drank alcohol at least once a month, or used marijuana at least once a month with response options ranging from 0(*no friends*) to 3(*3 friends*) (Eitle, Johnson-Jennings, & Eitle, 2013). These items were averaged ($\alpha=.79$) and reverse coded such that higher scores indicated that youth had less deviant friends. Limited unstructured peer time was captured with a question that asked the number of times that the respondent just hung out with friends

in the past week. Response options ranged from 0(*not at all*) to 3(*5 or more times*); however, this variable was reverse coded so that higher scores indicated less unstructured time.

Community Assets—As indicators of community assets, we included measures of the neighborhood and supportive adults. To capture neighborhood connectedness, 3 true/false items were used (e.g., “You know most of the people in your neighborhood,” “In the past month, you have stopped on the street to talk with someone who lives in your neighborhood,” “People in this neighborhood look out for each other,” $\alpha = .56$). To capture other adult relationships, one question was used that asked youth about the extent to which adults cared about them on a scale from 1(*not at all*) to 5(*very much*).

Total Assets—In addition to exploring assets separately by context, we also created a measure of the total assets possessed by each respondent. To create this variable, each of the aforementioned 11 assets was standardized and then they were summed. After summing the assets, we standardized the total asset variable to improve interpretability.

Developmental and Demographic Variables—Although our primary interest was to explore the protective role of developmental assets among American Indians, we recognize that a number of developmental and demographic factors have also been linked to risky sexual behavior and we control for these variables in all statistical models. Pubertal development was measured with four gender-specific items that asked the respondent the extent to which he or she had begun to develop secondary sex characteristics (e.g., breasts, facial hair) and queried about physical development (e.g., “How advanced is your physical development compared to other girls your age?”). These items were standardized and the mean was computed, with higher scores indicating more physical maturity ($\alpha = .70$ for girls and $.63$ for boys). In addition, we controlled for age (in years) and gender (coded 1=*female*). We distinguished mono-racial from multi-racial American Indians (Norris et al., 2012) by including an indicator of whether the respondent self-reported American Indian race only (coded 1) or identified as American Indian *and* another racial/ethnic group (e.g., American Indian and white, coded 0). Ramisetty-Mikler and Ebama (2011) found in a study of an American Indian and Alaska Native subsample of data from the Youth Risk Behavior Survey (YRBS) that multi-racial American Indians differed from mono-racial American Indians based on key sexual behaviors such as age at sexual initiation and number of sexual partners. We also include a variable indicating the highest level of education of either parent, which was dichotomized into a variable indicating whether either parent had achieved a college degree (1=*yes*). Finally, a dichotomous variable captured whether the youth lived with two biological or adoptive parents (1=*yes*).

Analytical Strategy

We conducted a series of regression models in which sexual behaviors measured during young adulthood were regressed on assets measured during early and mid-adolescence. First, basic models were computed in which each of the 11 assets were entered one at a time as predictors of sexual behaviors, controlling for developmental and demographic characteristics including pubertal development, age, gender, race, parental education, and family structure. Subsequently, we explored how cumulative assets were associated with the

three sexual behavior outcomes, while again controlling for relevant covariates. The type of model computed varied by outcome domain. Condom use frequency was modeled with linear regression and the dichotomous outcome of early sexual debut was modeled with logistic regression. Because the number of lifetime sexual partners was a highly skewed count variable, negative binomial regression was used. All analyses were conducted in Stata 13 using the *mi estimate* and *svy* commands in order to account for missing data as well as for the complex survey design of the data.

Results

Descriptive Statistics

Table 1 presents descriptive information about developmental assets, developmental and demographic covariates, and sexual behavior outcomes. The results demonstrate that the early adolescent American Indians in the current sample scored highly on most of the internal and external asset scales. In particular, for 10 out of the 11 individual assets, the mean value was higher than the midpoint on the scale. The one exception was the frequency of unstructured socializing. Unstructured socializing is considered developmentally risky for early adolescents; however, it occurred frequently among this sample (about 3–4 times per week).

Descriptive information about the prevalence of sexual behaviors among the current sample of American Indians is also illuminating. About one quarter of the sample (24%) experienced sexual intercourse before 15 years of age. By early adulthood, the average number of lifetime sexual partners reported by respondents was 6.60 ($SE = .56$). Among those young adults who had intercourse within the past year, the mean condom use frequency was 2.00 ($SE = .13$) on a scale from 0(*never*) to 4(*always*) indicating that on average, respondents reported using condoms on about half of the occasions that they had sex.

Developmental Assets and Risky Sexual Behaviors

Table 2 presents the results of regression models examining sexual behaviors regressed on individual developmental assets. These models control for demographic and developmental variables; however, each individual asset is entered separately (i.e., one at a time) in the regression models.

Early Sexual Debut—The leftmost columns present the results of logistic regression analyses examining assets associated with early sexual debut. One of the three personal assets, self-control, predicted early sexual debut. The results demonstrated that for each standard deviation increase in self-control, the odds of early sexual debut were decreased by 38%, controlling for demographic and developmental variables. In the family domain, parental communication was associated negatively with early sexual debut. Furthermore, school attachment and non-deviant friends were linked negatively to early sexual debut, holding control variables constant. A standard deviation increase in school attachment decreased the odds of early sexual debut by 35%. Neither measure of community assets predicted early sexual debut.

Number of Sexual Partners—The second set of models presents the results of negative binomial regression analyses predicting the number of lifetime sexual partners reported by a respondent. As with early sexual debut, self-control was the only personal asset that was a significant predictor of the number of lifetime sexual partners. In addition, family support was linked to fewer sexual partners, other things being equal. A standard deviation increase in family support decreased the expected number of sexual partners by a factor of .81 (controlling for relevant covariates). School attachment and non-deviant friends also were associated with fewer sexual partners. The results demonstrated that for each standard deviation increase in non-deviant peers, the expected number of sexual partners decreased by 33%, holding other factors constant.

Condom Use Frequency—We also conducted regression analyses examining past year condom use frequency. In these analyses, we omitted respondents who reported not having sex in the past year. Family support emerged as a significant predictor of condom use frequency as did caring adults. A standard deviation increase in the extent of caring adults during early adolescence was associated with a .24 increase in condom use frequency in early adulthood.

Cumulative Assets and Risky Sexual Behaviors—Table 3 presents the results of our models exploring how cumulative assets are associated with sexual behaviors. For these models, we show coefficients and standard errors for all variables in the statistical models, including the developmental and demographic variables. Consistent with the developmental assets paradigm, the cumulative effect of developmental assets during early adolescence was associated negatively with early sexual debut, with a standard deviation increase in cumulative assets associated with a 46% decrease in the odds of early sexual debut. In addition, youth who had more cumulative assets during early adolescence reported fewer sexual partners as young adults. Finally, the results demonstrated that cumulative assets predicted condom use frequency in early adulthood. A few developmental or demographic controls were also associated with sexual behaviors among this sample. For instance, living in a two-biological or adoptive parent household was associated with a later age of first sexual intercourse and female young adults reported fewer lifetime sexual partners than males. In addition, when controlling for other covariates, respondents who identified as single race (i.e., American Indian only) used condoms less frequently than those who identified as American Indian as well as another racial or ethnic group.

Discussion

Previous work demonstrates that developmental assets during adolescence may reduce the likelihood of risky sexual behaviors such as early sexual initiation and non-use of birth control (Aspy et al., 2010; Vesely et al., 2004). Understanding protective assets may be particularly important for American Indians and Alaskan Natives, a unique racial group in the United States with high rates of sexually transmitted infections and teenage pregnancy (Centers for Disease Control and Prevention and Indian Health Service, 2012). Thus, the current study sought to examine whether developmental assets during early adolescence predicted sexual behaviors measured 7 or 8 years later. By using a national longitudinal dataset and exploring diverse developmental assets, this study represents one of the first

systematic efforts to evaluate the role of adolescent assets on young adult sexual behaviors for American Indians. Our results demonstrated that select personal, family, and peer factors were each linked uniquely to sexual behavior. Notably, cumulative assets emerged as a particularly salient predictor across models, highlighting the importance of considering the additive effect of assets among this population.

The results from the current study highlight the many internal and external assets possessed by American Indian early adolescents. Our descriptive results found that American Indian adolescents reported higher than midpoint asset scores in nearly all of the contexts measured in the current study. These mean values demonstrate that early adolescents in the current sample possessed important personal characteristics, had strong relationships with family members, and had prosocial peers and supportive communities. Taken together, they reinforce qualitative findings and clearly emphasize the numerous strengths possessed by American Indian adolescents (McMahon et al., 2012).

Within the internal asset domain, we explored how self-esteem, self-control, and deliberative decision-making during early adolescence were each associated with sexual behaviors during young adulthood. Of these internal assets, only self-control predicted sexual behavior; deliberative decision-making and self-esteem were not associated with any of the sexual behaviors explored in the current study. In particular, youth who had more self-control during early adolescence reported a later sexual debut and fewer sexual partners. These findings are consistent with previous research linking self-control to adolescent risky sexual activity among racially diverse national samples (Hope & Chapple, 2004). Furthermore, they are congruous with previous studies linking self-control to health behaviors among American Indians. For instance, Morris, Wood, and Dunaway (2007) found that self-control was a significant predictor of various health-risk behaviors among a sample of American Indian high school students, even after controlling for a measure of traditionalism.

In addition to highlighting personal assets, the developmental assets framework also emphasizes external assets that are available to youth. Thus, we explored the resources available to American Indian youth in the family, school/peer, and community contexts. Among the family assets, we found that respondents who experienced more familial love and support during early adolescence reported fewer lifetime sexual partners during early adulthood than those who experienced less love and support. Family support also predicted the frequency with which respondents used condoms as young adults. Furthermore, respondents who were more satisfied with their communication with their parents had a later sexual debut. These associations are consistent with previous research using community-based samples of American Indians. For instance, past research has identified parental support as an important protective factor against American Indian risky behavior (Mmari et al., 2010). In addition, prior research has linked specific forms of parental communication (regarding HIV/AIDs) with a lower likelihood of engaging in risky sexual behavior among American Indians (Marsiglia, Nieri, & Stiffman, 2006).

More generally, our finding of the salience of family assets in protecting American Indian adolescents from engaging in risky sexual behaviors in adulthood is supportive of prior work

establishing the importance of the family in reducing other risky behaviors, including substance use (Baldwin et al., 2011). Importantly, the definition of family used in the current study is not limited to two biological-parent families. It should be recognized that many American Indian youth live in non-traditional homes, and thus the parental-figures in the household may include step-parents, grandparents or other relatives. As noted by Walters, Simoni, and Evans-Campbell (2002), the role of the family may be more important (relative to other groups) in protecting American Indian adolescents because of the primacy afforded to the family in their communities. As these authors note, “from an indigenous perspective, poverty has been described as being without relatives” (Walters et al., 2002: S111). Indeed, recent qualitative research supports this perspective, as American Indian youth readily cite their family as a preeminent source of strength in their lives (McMahon et al., 2012)

The central role of the family may explain another predictor of risky sexual behaviors revealed in the analyses. In particular, our measure of caring adults was associated with more condom use. Although this asset was included in the community domain, it may be capturing the role of the extended family. Prior evidence has established the protective role of extended family members such as grandparents in reducing risky behaviors such as problematic alcohol use among American Indian adolescents (Eitle et al., 2013). Similarly, research has linked non-parental role models with a lower likelihood of alcohol, cigarette, and substance use among American Indian youth (Beebe, 2008). Our finding that perceptions of caring adults predicted condom use provides further support for the role of non-parental adults in protecting American Indian adolescents (see also Mmari et al., 2010).

Regarding the school/peer domain, two assets were identified as significant predictors of risky sexual behaviors. Greater school attachment and having non-deviant friends were both associated with a later onset of sexual intercourse and fewer lifetime sexual partners. Such findings are consistent with research documenting an association between school connectedness and a lower likelihood of sexual intercourse among American Indian adolescent girls (Hellerstedt et al., 2006) and research linking less prosocial peers and less school enjoyment with earlier sexual initiation among American Indian boys (Mitchell et al., 2007). More broadly, the importance of the school and peer context is consistent with past research establishing the importance of peers and school attachment in reducing the risk of other behaviors, such as alcohol use among this population (Dickens, Dieterich, Henry, & Beauvais, 2012).

Arguably the most important contribution of the current study is our focus on cumulative assets. The results demonstrated that cumulative developmental assets protected against early sexual debut and predicted fewer sexual partners and more frequent condom use. These associations highlight the importance of considering the potential additive effects of developmental assets, rather than merely considering assets in isolation from one another or statistically controlling for other assets. By taking a broader look at developmental assets across contextual domains, researchers may better capture the resources available to an individual adolescent and better understand the accumulation of advantage across childhood and adolescence. Indeed, our call for a *cumulative assets* approach mirrors previous research that has used a *cumulative risk* approach to understanding early sexual initiation among American Indians (Mitchell et al., 2007). The cumulative nature of developmental assets

found in the current study is in line with the developmental assets framework which highlights the inputs needed from schools, families, and communities in order to raise a healthy, risk-free young adult (Benson et al., 1998). Indeed, in the current study, assets within multiple contextual domains (i.e., personal, family, and school/peer) were found to be significant predictors of sexual behaviors. Thus, studies exploring sexual risk among American Indians that focus on only one contextual domain may fail to capture important strengths among this population.

More generally, our results contribute to the small, but growing literature linking adolescent assets with sexual behavior outcomes among various racial/ethnic groups. For example, in a large, predominantly white sample of Vermont high school students, the number of youth assets were linked to a lower odds of ever having sex (Murphey, Lamonda, Carney, & Duncan, 2004). In addition, assets have been shown to protect against risky sexual behaviors among high school students in South Carolina (Evans et al., 2004) and predict a later age at first sexual intercourse among African-American males in Mobile Alabama (Talbot, Henderson, Stonecipher, Bolland, & Lian, 2013). And using a large inner-city sample, Oman and colleagues (2004) found that assets were associated with delayed onset of sexual intercourse and using birth control at last sex. Coupled with the results from our study, these findings illustrate the protective role of developmental assets in deterring risky sexual behaviors, independent of race and ethnicity.

Limitations

There are a number of data and methodological limitations with the current study that should be noted. First and foremost, Add Health did not ask information about tribal affiliation. There are over 500 tribes in the United States, each with its own unique norms and customs. Unfortunately, we could not explore tribal differences with the current data. In addition, no reservation schools were included in the Add Health sample. Thus, we are unable to compare American Indians attending reservation schools to those attending schools in urban areas. Furthermore, the fact that a reservation school was not sampled means that the results may not be generalizable to the estimated 22% of American Indians and Alaskan Natives who live on reservations or in tribal areas whose challenges and life experiences may have led to unique developmental assets. Finally, the current study was also limited by the measurement of variables in Add Health. A few of our assets were single-item indicators rather than scales and questions regarding developmental assets were not asked consistently across waves. As a result, we were unable to explore how developmental assets changed over time and how asset trajectories might be related to sexual behaviors.

The results from the current study are intriguing, but exploratory. We explored the direct association between assets and sexual outcomes. In the broader literature on risk and resilience, this basic approach is known as a compensatory model (Fergus & Zimmerman, 2005). When considering future research in this area, it will be important to consider the multiple ways in which early adolescent assets may impact outcomes among American Indians. For example, it will be important to examine a protective model, or whether assets buffer (or moderate) the association between a risk factor and an outcome. Particular characteristics specific to American Indians, such as feelings of historical loss and grief,

have been linked to risky sexual behavior among adults (Anastario, FourStar, & Rink, 2013). Understanding the association between historical loss among adolescents and risky sexual behaviors, as well as whether assets are protective, will be an important direction for future research.

Implications and Conclusions

Understanding developmental assets during early adolescence is important given the many physiological, cognitive, social, and institutional changes that occur during this time period. Furthermore, research has shown that as youth progress from early adolescence into mid-adolescence, the number of developmental assets available to them decreases slightly (Scales, Benson, Roehlkepartain, Sesma Jr., & van Dulmen, 2006). However, this decrease is not inevitable. By intervening to foster strengths during early adolescence, these assets might be maintained and even accumulate. Fostering assets may be especially important for racial/ethnic minorities such as American Indians that have been historically marginalized, oppressed, and problematized by the scientific community. A holistic asset-based approach emphasizes the strengths of American Indian adolescents and their families, schools, and communities. The findings from the current study suggest that these strengths protect against subsequent risky sexual behaviors and thus may be a promising point for intervention.

The current study makes a novel contribution to the literature by examining a diverse set of developmental assets during early adolescence as predictors of young adult sexual behavior among a national sample of American Indians. Overall, we found support for the utility of the developmental assets framework to account for American Indian risky sexual activity in young adulthood. Future studies should continue to examine the internal strengths and external supports that help youth make healthy choices and avoid risky sexual behavior. Understanding these assets is of utmost importance, in light of research showing that American Indians experience pressure to initiate sexual intercourse at an early age (Kaufman et al., 2007) and American Indian and Alaskan Natives face high rates of sexually transmitted diseases and teenage pregnancy (Centers for Disease Control and Prevention and Indian Health Service, 2012; Hamilton & Ventura, 2012).

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Table 1

Descriptive Statistics for the Sample (N = 456)

	<u>Mean/Proportion</u>	<u>SE</u>
<u>Developmental and Demographic Variables (Measured at Wave 1^a)</u>		
Age	14.40	0.13
Female	0.51	
Single race (American Indian)	0.30	
At least one parent graduated from college	0.24	
Two biological or adoptive parent household	0.49	
Urbanicity		
Urban	0.29	
Suburban	0.47	
Rural	0.24	
<u>Assets (Measured at Wave 1^a)</u>		
<u>Personal Assets</u>		
Self-esteem	3.96	0.05
Deliberative decision-making	3.70	0.05
<u>Family Assets</u>		
Family support	3.91	0.04
Parent communication	4.00	0.06
Parent expectations	4.16	0.06
<u>School/Peer Assets</u>		
School attachment	3.50	0.06
Non-deviant friends	2.00	0.07
Limited unstructured socializing	1.04	0.06
<u>Community Assets</u>		
Caring adults	4.36	0.06
Neighborhood connectedness	0.74	0.02
<u>Dependent Variables (Measured at Wave 3)^b</u>		
Early Sex	0.24	
Number of sexual partners	6.60	0.56
Condom use frequency ^c	2.00	0.13

Source: National Survey of Adolescent Health (Add Health).

Notes: These analyses use imputed data and are weighted to account for the complex survey design. Assets are presented unstandardized for descriptive purposes. Pubertal development and self-control are not displayed because items were standardized prior to the creation of each measure.

^aPredictor variables measured at Wave 1 when respondents were 12–16 years old.

^bDependent variables measured at Wave 3 when respondents were 18–23 years old.

^cExcludes individuals who reported that they did not have sex in the past year.

Table 2

Association between Individual Assets and Risky Sexual Behaviors

	<u>Early Sexual Debut</u>		<u>Number of Sexual Partners</u>		<u>Condom Use Frequency</u>	
	<u>OR</u>	<u>SE</u>	<u>IRR</u>	<u>SE</u>	<u>B</u>	<u>SE</u>
<u>Personal Assets</u>						
Self-esteem	0.866	(0.158)	0.983	(0.082)	0.030	(0.114)
Self-control	0.622	(0.094) **	0.819	(0.060) **	0.099	(0.093)
Deliberative decision-making	0.758	(0.143)	0.878	(0.062) †	0.152	(0.100)
<u>Family Assets</u>						
Family support	0.748	(0.137)	0.808	(0.057) **	0.234	(0.101) *
Parent communication	0.643	(0.134) *	0.857	(0.075) †	0.127	(0.111)
Parent expectations	0.768	(0.110) †	0.927	(0.082)	0.169	(0.095) †
<u>School/Peer Assets</u>						
School attachment	0.650	(0.100) **	0.811	(0.055) **	-0.010	(0.096)
Non-deviant friends	0.507	(0.100) ***	0.670	(0.063) ***	0.010	(0.108)
Limited unstructured socializing	0.851	(0.166)	0.882	(0.070)	0.129	(0.116)
<u>Community Assets</u>						
Caring adults	0.930	(0.122)	0.943	(0.083)	0.240	(0.104) *
Neighborhood connectedness	0.782	(0.148)	1.079	(0.104)	-0.118	(0.118)

Source: National Survey of Adolescent Health (Add Health).

Notes: These results use imputed data and are weighted to account for the complex survey design. Each asset is entered into a separate regression equation that controls for pubertal development, age, gender, race, parental education, and family structure. Assets and covariates were measured at Wave 1 and outcomes were measured at Wave 3. Assets were standardized prior to computing models. OR indicates odds ratios, IRR indicates incidence rate ratios, and SE indicates standard error.

†
p < .1*
p < .05,**
p < .01,***
p < .001.

Table 3

Association between Cumulative Assets and Risky Sexual Behaviors

	Early Sexual Debut		Number of Sexual Partners		Condom Use Frequency	
	OR	SE	IRR	SE	B	SE
Cumulative Assets	0.541	(0.096)	***	0.779	***	0.189 (0.089) *
<u>Developmental and Demographic Variables</u>						
Pubertal development	1.458	(0.361)		1.174	(0.116)	0.075 (0.131)
Age	0.669	(0.098)	**	1.035	(0.073)	-0.133 (0.134)
Female	1.317	(0.518)		0.664	(0.118) *	-0.442 (0.262) †
Single race (American Indian)	1.294	(0.574)		0.991	(0.191)	-0.525 (0.258) *
At least one parent graduated from college	0.489	(0.211)		0.842	(0.142)	-0.028 (0.264)
Two biological or adoptive parent family	0.403	(0.161)	*	0.893	(0.153)	-0.160 (0.228)
Constant	0.324	(0.130)	***	7.689	*** (1.304)	2.529 (0.250) ***

Source: National Survey of Adolescent Health (Add Health).

Notes: These results use imputed data and are weighted to account for the complex survey design. Cumulative assets and covariates were measured at Wave 1 and outcomes were measured at Wave 3. The cumulative asset variable is the sum of 11 standardized assets. Assets were standardized and age was centered prior to computing models. OR indicates odds ratios, IRR indicates incidence rate ratios, and SE indicates standard error.

† p < .1

* p < .05,

** p < .01,

*** p < .001