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Youth assets and alcohol-related problems among male and female youth: Results from a longitudinal cohort study

Kristen Clements-Nolle*, Roy F. Oman, Minggen Lu, Taylor Lensch, Lea Moser

University of Nevada, Reno School of Community Health Sciences, United States

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ABSTRACT

Youth who experience alcohol-related problems are at increased risk for developing alcohol dependence. Identifying factors associated with adolescent alcohol-related problems is essential, but most studies have focused on risk factors or a limited number of protective factors, with little attention to sex differences. We assessed the prospective association between 17 assets and alcohol-related problems among male and female youth.

A 4-year cohort study with 1, 111 youth living in randomly-selected census tracts in the Oklahoma City Metropolitan Area was conducted. Follow-up for the current study began at wave 2 (2004/2005; $N = 1079$). Seventeen assets at the individual-, family-, and community-levels were measured. Five questions documented alcohol-related problems in the past 12 months. Generalized linear mixed models evaluated the prospective influence of assets on alcohol-related problems, separately for males and females. Models controlled for age, race/ethnicity, family structure, and parental income.

Overall, females had more assets than males, but the protective influence of assets on alcohol-related problems over time was stronger for males. Six assets uniquely protected males (responsible choices [AOR = 0.58, 95% CI = 0.36–0.94], educational aspirations [AOR = 0.54, 95% CI = 0.31–0.93], parental monitoring [AOR = 0.41, 95% CI = 0.27–0.64], community involvement [AOR = 0.57, 95% CI = 0.34–0.97], use of time for groups/sports [AOR = 0.64, 95% CI = 0.42–0.97], and school connectedness [AOR = 0.51, 95% CI = 0.34–0.77]), and 3 uniquely protected females (general self-confidence [AOR = 0.62, 95% CI = 0.40–0.96], good health practices [AOR = 0.67, 95% CI = 0.47–0.95], and relationship with mother [AOR = 0.53, 95% CI = 0.36–0.80]).

Strengthening youth assets across multiple domains may decrease alcohol-related problems for both males and females; however, gender-specific approaches to asset building are also warranted.

1. Introduction

The prevalence of alcohol use among adolescents in the United States has decreased substantially since the 1980s, but recent data suggest that such declines have leveled off (Johnston et al., 2018). Moreover, alcohol remains the most frequently used substance among adolescents with 62% of high school seniors in 2017 reporting they have consumed alcohol and 17% reporting recent binge drinking (five or more drinks in a row) (Johnston et al., 2018). Youth who drink alcohol are at increased risk for physical, emotional, and social problems in adulthood (Bonnie and O'Connell, 2004), but those who have already started to experience problems related to their drinking during adolescence may be at even greater risk (Grigsby et al., 2016). Prospective research demonstrates that alcohol-related problems during adolescence predict alcohol dependence in early adulthood (Dick et al., 2011) and this does not appear to be due to differences in family, school, or neighborhood characteristics (Rose et al., 2014). Therefore, identifying factors associated with alcohol-related problems among youth is critical for the development of substance abuse prevention efforts.

To date, most research in the United States has focused on risk and protective factors for alcohol use, rather than alcohol-related problems among youth (Grigsby et al., 2016). Studies focusing on alcohol-related problems have primarily assessed risk factors, finding consistent evidence that psychological problems, perceived stress, positive drinking expectancies, poor self-regulation, parental alcohol use, and peer norms supportive of alcohol use are prospectively associated with alcohol-related problems (Grigsby et al., 2016). Few studies have prospectively

* Corresponding author at: University of Nevada, Reno School of Community Health Sciences, Mailstop 274, Reno, NV 89557-0274, United States.
E-mail address: clements@unr.edu (K. Clements-Nolle).

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assessed protective factors (Grigsby et al., 2016), despite calls to promote the positive aspects of adolescent development in prevention efforts by focusing on the assets that youth possess, rather than solely focusing on risk factors or deficits (Weisberg et al., 2003). Such assets include skills, competencies, relationships, and opportunities that help youth avoid risky behaviors and increase the likelihood that they will successfully transition into early adulthood. Youth assets may operate at several levels (individual, family, and community) to promote positive youth development (Oman et al., 2010).

To date, only four studies have assessed the prospective influence of youth assets on alcohol-related problems. One study followed students in a large metropolitan school district for 4 years (1989–1992) and assessed the influence of eight psychosocial protective factors. The authors found that youth who were intolerant of wrongful conduct, such as theft, aggression, and lying, had reduced levels of alcohol-related problems (Costa et al., 1999). Three articles used data from the first two waves of the Longitudinal Study of Adolescent Health (AddHealth) in the early 1990s. Two of these articles focused on single protective factors and found that family cohesion was associated with lower levels of adolescent alcohol-related problems (Reeb et al., 2015) and non-parent family structure (living with adults other than parents or stepparents) was associated with a reduction in alcohol-related problems for American Indian youth (Eitle et al., 2013). The third study using AddHealth data included a wider range of protective factors at the individual, family, and extrafamilial level and found that maternal attachment was associated with a reduced likelihood of experiencing alcohol-related problems (Randolph et al., 2010).

While previous research highlights the importance of investigating youth assets, the findings are limited by high non-response and drop-out rates (Costa et al., 1999), a short duration of follow-up (Reeb et al., 2015; Eitle et al., 2013; Randolph et al., 2010), and a focus on single protective factors (Reeb et al., 2015; Eitle et al., 2013) or a limited range of factors (Costa et al., 1999; Randolph et al., 2010). Furthermore, research has not adequately investigated gender differences in the relationship between youth assets and alcohol-related problems despite evidence that the accumulation of protective factors across multiple domains varies for males and females and may influence substance use and related problems differently (Grigsby et al., 2016; Aspy et al., 2014; Hartman et al., 2009).

To further our understanding of factors that protect youth from alcohol-related problems, we prospectively assessed the association between seventeen youth assets at the individual-level, family-level, and community-level and alcohol-related problems among 1079 male and female adolescents over three years.

2. Methods

2.1. Participants and procedures

The Youth Asset Study (YAS) was a four-year study which began in 2003/2004 and ended 2007/2008. Five waves of data were collected annually from 1111 parent and youth dyads living in randomly-selected census tracts in the Oklahoma City Metropolitan Area. Census tracts were stratified by income and race/ethnicity using 2000 census data. To ensure a final sample that was racially/ethnically and economically diverse, census tracts were randomly selected equally from each stratum (Oman et al., 2009). Twenty census tracts were included in the study. All households in the randomly selected census tracts with at least one youth (aged 12–17 years) and one adult who spoke English or Spanish were eligible. Computer-assisted in person interviews were conducted with youth and parents separately in their homes; youth were left alone to enter their responses themselves when reporting risk behavior data. The overall response rate was 61% and 89% of participants had complete data from all 5 study waves (Oman et al., 2009). Prospective follow-up for the current study began at wave 2 ($N = 1079$) because measures of the outcome variable (alcohol-related problems) were not administered until wave 3. A University Institutional Review Board approved all study procedures.

2.2. Measures

2.2.1. Youth assets

Youth assets were measured with the Youth Asset Survey at each study wave. The Youth Asset Survey includes 61 questions and assesses 17 youth assets with demonstrated validity and reliability (Oman et al., 2010).

Seven assets measured individual-level strengths: responsible choices (3 items, e.g., “you can say no to activities you think are wrong”), educational aspirations for the future (2 items, e.g., “as you look to the future, how important is it that you stay in school?”), general aspirations for the future (3 items, e.g., “what are the chances that when you are an adult you will be successful in whatever you choose to do?”), general self-confidence (4 items, e.g., “I can generally handle whatever comes my way”), religiosity (4 items, e.g., “how important is it to you to be able to rely on religious teachings when you have a problem?”), cultural respect (4 items, e.g., “you trust people from other racial/ethnic cultures”), and good health practices (4 items, e.g., “it is important to you to be physically active ever day”).

Four assets measured family-level strengths: family communication (4 items, e.g., “how often do you talk to your parents about what is right and wrong?”), relationship with mother (4 items, e.g., “overall, you are satisfied with your relationship with your mother”), relationship with father (4 items, e.g., “how close do you feel to your father?”), and parental monitoring (4 items, e.g., “my parents know where I am after school”).

Six assets measured community-level strengths: non-parental adult role model (3 items, e.g., “you know adults who encourage you often”), community involvement (4 items, e.g., “you work to make your community a better place”), positive peer role models (4 items, e.g., “do most of your friends follow the rules their parents make for them?”), use of time for groups/sports (4 items, e.g., “you participate in out-of-school sports teams or groups”), use of time for religion (2 items, e.g., “last month I participated in religious or spiritual activities with at least one other person?”), and school connectedness (4 items, e.g., “you feel close to people at your school”).

Each item in the asset construct was scored on a Likert scale that was summed and divided by the number of items in order to generate a mean asset score ranging from 1 (e.g., “almost never”/”strongly disagree”) to 4 (e.g., “almost always”/”strongly agree”). As recommended by the Youth Asset Survey developers, each asset with a mean score of 3 or higher indicated that the asset was present (Oman et al., 2010).

2.2.2. Alcohol-related problems

Five questions from the national AddHealth study were used to assess alcohol-related problems (waves 3–5) (University of North Carolina, n.d.). Questions assessed the frequency of experiencing a range of problems that occurred as a result of the youth's use of alcohol. Youth were asked, “In the past 12 months, how many times has each of the following things happened to you: 1) you got in trouble with your parents because you had been drinking; 2) you had problems at school or with school work because you had been drinking; 3) you had problems with friends because you had been drinking; 4) you had problems with someone you were dating because you had been drinking; and 5) you got into a sexual situation that you later regretted because you had been drinking.” Each item was rated on a five-point scale ranging from 1 = “never” to 5 = “five or more times”. Based on expert panel recommendations (Hays and Ellickson, 1996) and previous research (Ellickson et al., 2001) youth were categorized as having alcohol-related problems if they experienced one or more of the alcohol-related problems in the past twelve months.

2.3. Covariates

Youth reported personal demographics including age, sex, race/ethnicity (categorized as Hispanic, non-Hispanic black, non-Hispanic white, non-Hispanic Native American, and non-Hispanic other) and household structure (categorized as single parent household, two parent household, and independent). Parents reported household income (categorized as < $35,000, $35,000–$62,000, > $62,000).

2.4. Analyses

Sex-differences in assets and alcohol-related problems were assessed with unadjusted odds ratios (ORs) and corresponding 95% confidence intervals (CIs). The generalized linear mixed model (GLMM) was used to evaluate the prospective, lagged effects of seventeen youth assets on alcohol-related problems, separately for males and females. The GLMM is recommended for analysis of repeated measurements on the same participants over time (Fitzmaurice et al., 2012). Maximum likelihood estimation based on Laplace approximation method was applied to estimate the unknown parameters and a random intercept was used to account for non-independence of repeated measures. Because alcohol-related problems were not assessed until wave three, the assets were analyzed as time varying and lagged (assets at wave 2 were used to predict alcohol-related problems at wave 3, assets at wave 3 were used to predict alcohol-problems at wave 4, and so forth). All models controlled for age, race/ethnicity, and time varying covariates (family structure and parental income); adjusted odds ratios (AORs) and corresponding 95% CIs are reported. All analyses were conducted using SAS, version 9.4 (SAS Institute Inc., Cary, NC).

3. Results

The mean age of participants at wave 2 was 15.3 years (SD = 1.6), 52.3% were female, 27.7% were Hispanic, 39.3% were non-Hispanic white, 23.6% were non-Hispanic black, and 9.4% were another non-Hispanic race. Almost a third (32.0%) of the youth were living in single-parent households and 47.0% of their parents made less than $35,000 annually. The prevalence of alcohol-related problems increased over time: wave 3 (28.9%), wave 4 (34.4%), wave 5 (36.4%). There were no significant differences in any of the sociodemographic characteristics or alcohol-related problems between male and female study participants.

Table 1 shows the prevalence of youth assets at the beginning of the follow-period (wave 2). The most commonly reported assets were at the individual level (educational aspirations for the future – 92.9% and cultural respect – 92.9%) and the least commonly reported assets were at the community level (community involvement – 17.6% and use of time for groups/sports – 32.3%). Compared to males, females had increased odds of possessing four assets at the individual-level (responsible choices, educational aspirations for the future, general aspirations for the future, and religiosity), and two assets at the community-level (community involvement, and use of time for religion). At the family-level, females had greater odds of possessing the family communication asset and parental monitoring asset, but lower odds of possessing the mother and father relationship assets.

The results of the prospective analyses are shown in Table 2. Six assets uniquely protected males, 3 uniquely protected females, and 4

Table 2
Prospective associations between youth assets and alcohol-related problems among 1079 participants in the Youth Asset Study - Oklahoma City Metropolitan Area, wave 2 (2004/2005) to wave 5 (2007/2008).

	Males AOR (95% CI)[a]	Females AOR (95% CI)[a]
Individual assets		
1) Responsible choices	0.58 (0.36–0.94)	0.86 (0.50–1.47)
2) Educational aspirations for the future	0.54 (0.31–0.93)	0.75 (0.40–1.38)
3) General aspirations for the future	1.02 (0.57–1.81)	0.61 (0.30–1.26)
4) General self-confidence	1.39 (0.85–2.28)	0.62 (0.40–0.96)
5) Religiosity	0.49 (0.31–0.77)	0.50 (0.30–0.82)
6) Cultural respect	0.98 (0.43–2.20)	0.76 (0.34–1.71)
7) Good health practices	0.90 (0.62–1.34)	0.67 (0.47–0.95)
Family assets		
1) Family communication	0.72 (0.50–1.04)	0.71 (0.50–1.01)
2) Relationship with mother	1.34 (0.78–2.31)	0.53 (0.36–0.80)
3) Relationship with father	0.55 (0.35–0.85)	0.56 (0.38–0.83)
4) Parental monitoring	0.41 (0.27–0.64)	0.63 (0.39–1.06)
Community assets		
1) Non-parental adult role models	0.73 (0.45–1.19)	0.71 (0.44–1.13)
2) Community involvement	0.57 (0.34–0.97)	0.74 (0.48–1.15)
3) Positive peer role models	0.43 (0.30–0.62)	0.61 (0.43–0.86)
4) Use of time for groups/sports	0.64 (0.42–0.97)	0.99 (0.66–1.50)
5) Use of time for religion	0.48 (0.33–0.70)	0.59 (0.41–0.84)
6) School connectedness	0.51 (0.34–0.77)	0.74 (0.51–1.08)

[a] Generalized linear mixed models controlling for age, race/ethnicity, family structure (time varying), and parental income (time varying).

Table 1
Sex differences in assets among 1079 participants in the Youth Asset Study – Oklahoma City Metropolitan Area, Wave 2 (2004/2005).

	Total N = 1079 (%)	Males n = 515 (%)	Females n = 564 (%)	Sex differences OR (95% CI) Referent = male
Individual assets (wave 2)				
Responsible choices	940 (87.1)	434 (84.3)	506 (89.7)	1.63(1.14,2.34)
Educational aspirations for future	1002 (92.9)	467 (90.7)	535 (94.9)	1.90(1.18,3.06)
General aspirations for future	956 (88.7)	434 (84.4)	522 (92.6)	2.29(1.54,3.40)
General self-confidence	860 (79.7)	422 (81.9)	438 (77.7)	0.77(0.57,1.03)
Religiosity	901 (83.5)	414 (80.4)	487 (86.4)	1.54(1.12,2.13)
Cultural respect	1002 (92.9)	472 (91.7)	530 (94.0)	1.42(0.89,2.26)
Good health practices	662 (61.4)	331 (64.3)	331 (58.3)	0.79(0.62,1.01)
Family assets (wave 2)				
Family communication	552 (51.2)	238 (46.2)	314 (55.7)	1.46(1.15,1.86)
Relationship with mother	893 (83.4)	447 (88.0)	446 (79.2)	0.52(0.37,0.73)
Relationship with father	656 (66.3)	351 (72.7)	305 (60.2)	0.57(0.43,0.74)
Parental monitoring	933 (86.5)	430 (83.5)	503 (89.2)	1.63(1.15,2.32)
Community assets (wave 2)				
Non-parental adult role models	863 (80.0)	401 (77.9)	462 (81.9)	1.29(0.96,1.74)
Community involvement	190 (17.6)	68 (13.2)	122 (21.6)	1.81(1.31,2.51)
Positive peer role models	628 (58.2)	289 (56.1)	339 (60.1)	1.18(0.92,1.50)
Use of time for groups/sports	347 (32.3)	174 (33.9)	173 (30.9)	0.87(0.68,1.23)
Use of time for religion	544 (50.4)	240 (46.6)	304 (53.9)	1.34(1.05,1.70)
School connectedness	763 (71.4)	365 (71.4)	398 (71.3)	0.99(0.76,1.30)

protected both males and females from alcohol-related problems. At the individual-level, males who reported responsible choices (AOR = 0.58, 95% CI = 0.36–0.94) and educational aspirations for the future (AOR = 0.54, 95% CI = 0.31–0.93) and females who had general self-confidence (AOR = 0.62, 95% CI = 0.40–0.96) and good health practices (AOR = 0.67, 95% CI = 0.47–0.95) had lower odds of alcohol-related problems compared to youth who did not have these assets; religiosity was protective for both males and females (AOR = 0.49, 95% CI = 0.31–0.77 and AOR = 0.50, 95% CI = 0.30–0.82, respectively). At the family-level, males who reported parental monitoring (AOR = 0.41, 95% CI = 0.27–0.64) and females who reported a relationship with their mother (AOR = 0.53, 95% CI = 0.36–0.80) had lower odds of drinking-related problems; having a relationship with their father was protective for both males and females (AOR = 0.55, 95% CI = 0.35–0.85 and AOR = 0.56, 95% CI = 0.38–0.83, respectively). At the community-level, males who reported community involvement (AOR = 0.57, 95% CI = 0.34, 0.97), use of time for groups-sports (AOR = 0.64, 95% CI = 0.42–0.97), and school connectedness (AOR = 0.51, 95% CI = 0.34–0.77) had lower odds of alcohol-related problems. Both males and females who reported having positive peer role models (AOR = 0.43, 95% CI = 0.30–0.62 and AOR = 0.61, 95% CI = 0.43–0.86, respectively) and use of time for religion (AOR = 0.48, 95% CI = 0.33, 0.70 and AOR = 0.59, 95% CI = 0.41–0.84, respectively) had lower odds of alcohol-related problems.

4. Discussion

The purpose of this study was to assess prospective associations between 17 youth assets at the individual-, family-, and community-levels and alcohol-related problems among male and female youth. By the end of the 3-year follow-up period (wave 5), over one third of male and female participants reported interpersonal, school, and work problems related to their use of alcohol in the past twelve months. The similar proportion of male and female youth with alcohol-related problems supports recent research that has shown that the gender gap in alcohol use, misuse, and related-problems among adolescents has closed over time (Johnston et al., 2018; Center for Behavioral Health Statistics and Quality, 2018; Keyes et al., 2008). The findings also highlight the importance of focusing on a positive youth development approach, promoting positive assets for both male and female youth, rather than focusing solely on decreasing risk factors (Bonell et al., 2016).

Building on previous studies that demonstrated that protective factors at the family-level decrease adolescent alcohol-related problems (Reeb et al., 2015; Eitle et al., 2013; Randolph et al., 2010) our study provides evidence that the presence of multiple assets across different domains prospectively decrease the odds of youth developing alcohol-related problems. We also found gender differences in the accumulation of assets as well as the protective influence of assets on alcohol-related problems.

Overall, females had more assets than males at the beginning of the follow-up period (wave 2), but the protective influence of assets on alcohol-related problems over time was generally stronger for males, particularly at the community-level. At wave 2, only two assets at the family- level were more prevalent among males (relationship with mother and relationship with father), but six assets across the individual-level (responsible choices and educational aspirations for the future), family-level (parental monitoring), and community-level (community involvement, use of time for groups/sports, and school connectedness) uniquely protected males from alcohol-related problems. In comparison, eight assets were more common among females at wave 2, but only two assets at the individual level (general self-confidence and good health practices) and one at the family level (relationship with mother) uniquely protected females from alcohol-related problems. These findings highlight the importance of gender-specific approaches for building assets to prevent alcohol abuse among youth (Amaro et al., 2001); however, it is also important to focus on assets that were protective for both males and females, such as strong child-father relationships, positive peer role models, and use of time for religion.

Our findings should be interpreted in light of study limitations. First, youth with particular assets, such as religiosity or parental monitoring, may have underreported alcohol-related problems due to social desirability. However, to minimize underreporting of sensitive information, youth were left alone to respond to the behavioral questions using audio computer-assisted technology. Second, the overall response rate for our study was 61% and selection bias may have been introduced if youth with fewer assets and more alcohol-related problems did not participate. Third, while we controlled for age, race/ethnicity, and time varying covariates (family structure and parental income) in the prospective multiple regression models, potential confounders, such as depression were not assessed. There may be residual confounding related to other issues in youths' lives that may be associated with certain assets as well as alcohol-related problems.

Our study also has a number of strengths that addresses some limitations of previous research, specifically high drop-out rates, short follow-up duration, and assessment of a limited number of assets. Our prospective cohort design had high follow-up rates over 3 years and most participants had complete data across all waves of data collection. Additionally, we used a validated measure of youth assets that allowed us to evaluate their influence at the individual, family, and community levels (Oman et al., 2010). Overall, our study provides evidence that strengthening specific youth assets across multiple domains may decrease alcohol-related problems over time. However, it is important to note that while females had more assets than males, the protective influence was greater for males, particularly at the community-level. These results highlight the need for gender-specific approaches to promoting assets among adolescents.

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