Published in final edited form as:

J Adolesc Health. 2012 January ; 50(1): 100–102. doi:10.1016/j.jadohealth.2011.04.008.

Disordered Neighborhood Environments and Risk-Taking Propensity in Late Childhood through Adolescence

C. Debra M Furr-Holden, Ph.D.^{1,*}, Adam J. Milam, MHS¹, Elizabeth K. Reynolds, MS, Laura MacPherson, Ph.D, and Carl W. Lejuez, Ph.D.²

¹Department of Mental Health, Johns Hopkins University Bloomberg School of Public Health, 624 N. Broadway, Room 882, Baltimore, MD, 21205, USA

²Center for Addictions, Personality, and Emotion Research (CAPER). Department of Psychology. University of Maryland. 2103 Cole Activities Building, College Park, MD 20742, USA

Abstract

PURPOSE/METHODS: To investigate the relationship between childhood neighborhood environment and risk-taking propensity in adolescence using an objective environmental measure and laboratory-based risk-taking propensity measure.

RESULTS: Childhood neighborhood disorder predicted risk-taking propensity on a behavioral measure during early adolescence ($\beta=1.8$, $p<0.01$).

CONCLUSION: Early toxic environments impact laboratory-based behavioral manifestations of risk.

Keywords

Neighborhood; risk-taking; adolescent behavior; environmental exposure

INTRODUCTION

Risk-taking is associated with substance use and mental health problems in youth [I-III]. Traditional research examining risk-taking has relied on self-report methods with several limitations including response biases, inflation of method variance, and misunderstanding of questions [IV-V]. The Balloon Analogue Risk Task (BART) is an experimental laboratory-based risk-taking propensity measure and addresses common limitations to standardized self-assessments [V]. Over 20 research studies have established the BART's relationship to real-world risk-taking in samples spanning the full age range of adolescence [V].

Ambient neighborhood hazards (e.g., graffiti and property damage), neighborhood perceptions, and drug-related indicators (e.g., drug paraphernalia and people using drugs) have been associated with child and adolescent mental health problems [VI-VIII]. Gabarino (1995) suggests that risk-taking among youth is the by-product of socially toxic

© 2011 Society for Adolescent Medicine. Published by Elsevier Inc. All rights reserved.

*Correspondence should be directed to C. Debra Furr-Holden, Johns Hopkins University Bloomberg School of Public Health, Department of Mental Health, 624 N. Broadway, Room 882, Baltimore, MD, 21205, USA. Tel: (410) 347-3210; Fax (410) 347-3200; dhholden@jhsph.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

environments that lack developmental assets for youth. Excess opportunities for high-risk behavior are also more prevalent in disordered environments [VIII]. Increased exposure to social toxins early in the life course may negatively impact children's developmental trajectories giving rise to maladaptive coping that persist into adolescence [IX].

The current investigation examines the relationship between early adolescent risk-taking propensity and neighborhood environmental.

METHODS

Data Sources:

Risk-taking Propensity: The BART is a laboratory-based behavioral measure of risk-taking propensity. The computer-based simulation allows participants to pump balloons and earn points for each pump, that can be lost if the balloon is pumped past an undisclosed explosion point which varies across balloons. If the participant stops pumping the balloon before its explosion point, money is added to a permanent money display; if the balloon explodes the money is lost. The balloons have varying explosion points from one to 128 pumps, 64 being the average explosion point. The participant repeats this exercise 30 times. The resulting dependent measure is the average number of pumps excluding balloons that exploded [V], hereafter referred to as risk-taking propensity.

Neighborhood Disorder: The Neighborhood Inventory for Environmental Typology (NifETy)

The NifETy is a valid, reliable, observational instrument [VIII] that measures 172 indicators across seven domains including physical layout, dwellings, adult and youth activity, physical and social (dis)order, and specific indicators of violence, alcohol, and other drugs. NifETy ratings were conducted by trained two-person team field raters on the residential block-faces of participants upon completing Year One BART assessments. . An exploratory factor analysis was conducted and 11 items had prevalence above 5% and consistently loaded together (items listed in footnote to Table 1). The resulting disorder score was the sum of the factor loadings when the indicator was present. Some items were weighted more heavily than others (e.g. drug paraphernalia 0.855; trash, 0.506).

Participants were recruited from rural, suburban and urban neighborhoods in the greater Washington, D.C. metro area. Specific efforts were made to increase geographic, racial and economic status of the sample, with targeted advertisement. Supplemental funding allowed a sample of 196 youth to have neighborhood assessments to coincide with Year Two BART assessments. One hundred sixty-two (82.6%) youth with risk-taking and neighborhood assessments at year one had risk-taking propensity assessments at years two and three are included in this research. NifETy and BART data collections were approved by grantee Institutional Review Boards.

Data Analysis—Descriptive statistics were computed for all participants. Multi-variable linear regression models were used to assess the relationship between neighborhood disorder and risk-taking propensity. The semi-adjusted model assessed the independent effect of each demographic variable (i.e., gender, race, annual family income, and age) and neighborhood disorder on risk-taking propensity at year 3 after controlling for prior risk-taking. The full adjusted model included all variables in one model.

RESULTS

The sample consisted of 98 (60.5%) males and 64 (39.5%) females (Table 1). Nearly 50% of the sample was Caucasian and 37% was African American. The mean age was approximately 11 years ($SD = 0.80$). The mean annual family income was \$87,000 ($SD = \$50,000$). Income was not normally distributed (swilk, $p = 0.003$) and was transformed to a binary variable at the median, \$82,500.

Childhood neighborhood disorder predicted adolescent risk-taking propensity after controlling for prior risk-taking ($\beta = 1.42$, $p < 0.01$, Table 2). In the fully adjusted model, for each unit increase in neighborhood disorder, risk-taking propensity increased by 1.78. Also, African Americans scored lower on risk-taking propensity than did Caucasians ($\beta = -4.40$, $p = 0.03$), however, there was no racial/ethnic variation in neighborhood environment or the relationship between neighborhood disorder and risk-taking propensity. There were no other demographic variables associated with risk-taking propensity in the adjusted model.

DISCUSSION

This investigation identified an association between neighborhood disorder in childhood and risk-taking propensity in adolescence. While other studies have shown significant associations between environment and risk-taking [X] this is the first study to use an objective measure of neighborhood environment and an experimental measure of risk-taking propensity to demonstrate this relationship. These results are preliminary and should be viewed in light of a few study limitations. The sample size is modest, those lost to follow up may be different than the study sample, and only one follow-up time point was examined. Comparison of Wave 1 versus Wave 3 demographics showed no statistically significant differences so we suspect the impact of these limitations are minimal. Neighborhood assessments were only completed during wave 1; we were unable to control for current neighborhood disorder (i.e. neighborhood disorder at wave 3). The observed relationship with neighborhood disorder could be associated with adolescent (not childhood) exposure to neighborhood disorder. Future investigations will examine changes in neighborhood disorder over time. In general, this study had a relatively narrow focus in terms of adolescent outcomes. Future work should include more comprehensive assessment, including positive growth that might come from environmental adversity and protective factors that promote positive outcomes among youth living in adverse environments. Additionally, it would be informative to include other dimensions of risk behavior, including risk perception and intention. Despite these limitations, this preliminary investigation suggests more research is needed to better understand how early toxic neighborhood environments impact youth risk-taking. In addition, future developmentally inspired preventive interventions could be enhanced by including environmental components.

Acknowledgments

This research was supported by awards from the National Institute on Alcoholism and Alcohol Abuse (NIAAA) R01AA015196 to the Principal Investigator, C. Debra Furr-Holden, PhD and the National Institute on Drug Abuse NIDA R0118647 (parent grant and supplement #3); The authors would like to acknowledge the NIFeTy and BART study staff and participants.

REFERENCES

1. Crews FT, Boettiger CA. Impulsivity, frontal lobes and risk for addiction. *Pharmacol Biochem Behav.* 2009; 93:237–247. [PubMed: 19410598]
2. Winters KC, Botzet AM, Fahnhorst T. Impulsivity and its Relationship to Risky Sexual Behaviors and Drug Abuse. *J Child Adolesc Subst Abuse.* 2009; 18:43–56. [PubMed: 19777076]

3. Hampson SE, Andrews JA, Barckley M. Childhood predictors of adolescent marijuana use: Early sensation-seeking, deviant peer affiliation, and social images. *Addict Behav.* 2008; 33:1140–1147. [PubMed: 18547739]
4. Gullone E, Moore S. Adolescent risk-taking and the five-factor model of personality. *J Adolesc.* 2000; 23:393–407. [PubMed: 10936013]
5. Lejuez CW, Read JP, Kahler CW, et al. Evaluation of a behavioral measure of risk-taking: The Balloon Analogue Risk Task (BART). *J Exp Psychol Appl.* 2002; 8:75–84. [PubMed: 12075692]
6. Aneshensel C, Sucoff C. The neighborhood context of adolescent mental health. *J Health Soc Behav.* 1996; 37:293–310. [PubMed: 8997886]
7. Milam AJ, Furr-Holden CDM, Whitaker D, Smart M, Leaf PJ, Cooley-Strickland M. Neighborhood Environment and Internalizing Problems in African American Children. *Community Ment Health J.* in press.
8. Furr-Holden CDM, Smart MJ, Pokorni JP, et al. The NifETy Method for Environmental Assessment of Neighborhood-level Indicators of Alcohol and Other Drug Exposure. *Prev Sci.* 2008; 9:245–55. [PubMed: 18931911]
9. Furr-Holden CDM, Ialongo NS, Anthony JC, Petras H, Kellam SG. Developmentally Inspired drug prevention: middle school outcomes in a school-based randomized prevention trial. *Drug Alcohol Depend.* 2004; 73:149–158. [PubMed: 14725954]
10. Miles DR, van den Bree MB, Gupman AE, Newlin DB, Glantz MD, Pickens RW. A twin study on sensation seeking, risk-taking behavior, and marijuana use. *Drug Alcohol Depend.* 2001; 62:57–68. [PubMed: 11173168]

Table 1

Sample Characteristics

Characteristic (n=162)	
Mean Neighborhood Disorder (SD) ¹	1.32 (1.60)
Mean Risk-Taking Propensity (SD)	
Year 2	36.10 (15.54)
Year 3	39.70 (14.30)
Mean Age at year one (SD)	10.94 (0.80)
Gender (%)	
Male	98 (60.50)
Female	64 (39.50)
Race ² (%)	
White	81 (50.31)
Black	60 (37.27)
Other	20 (12.42)
Annual Family Income ³ (%)	
<Median	77 (49.68)
>Median	78 (50.32)

¹ Items in the disorder score: structures with broken windows, unboarded abandoned buildings, unmaintained property, trash in open spaces, broken bottles, graffiti, noise, people yelling, public alcohol consumption, drug paraphernalia and discarded alcohol bottles.

² n = 161

³ n = 155

Table 2

Results from Linear Regression Models: Neighborhood Disorder and Risk-taking Propensity

	Semi-Adjusted Models ³ (n=162)		Fully-Adjusted Model ⁴ (n=154)	
	β	p	β	P
Neighborhood Disorder	1.42	<0.01	1.78	<0.01
Risk-taking Propensity, Year 2	0.62	<0.01	0.60	<0.01
Male	0.95	0.58	0.20	0.91
Race ¹				
White (reference)	--	--	--	--
Black	-3.76	0.04	-4.40	0.03
Other	-3.99	0.14	-4.69	0.09
Annual Family Income (>Median) ²	3.42	0.04	1.26	0.50
Age	-0.22	0.83	-0.02	0.96

¹
n = 161²
n = 155³
each variable adjusted for year 2 risk-taking propensity⁴
adjusted for all variables in the table