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DISASTER AND YOUTH VIOLENCE: THE EXPERIENCE OF SCHOOL ATTENDING YOUTH IN NEW ORLEANS

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Abstract

Purpose—Although disaster exposure is linked with increased child aggression, population-level trends are unknown. Pre- to post-Katrina changes in violence-related behaviors among New Orleans high school youth (ages 12-18) were assessed.

Methods—Data from the 2003 (pre-Katrina), 2005 (pre-Katrina) and 2007 (post-Katrina) New Orleans Youth Risk Behavior Survey (n=5,267) were utilized. Crude comparisons across years of population characteristics and violence behavior prevalence were made with chi-square analyses. Changes in violence-related behaviors over time were assessed with logistic regression models including indicators for survey years and controls for compositional changes.

Results—Age, gender and race/ethnicity of school-attending youth were stable across years. In models controlling for demographics, most behaviors were stable over time. Some changes were observed for all groups: dating violence and forced sex increased prior to the storm; weapon carrying and missing school due to feeling unsafe decreased after the storm. Among African American adolescents only, being threatened at school increased before Katrina.

Conclusions—Results do not support significant population-level increases in violent behavior among New Orleans school-attending youths post-Katrina. Factors that buffered New Orleans students from post-Katrina violence increases, such as population composition changes or increased supportive services, may explain these findings.

INTRODUCTION

In August 2005, Hurricane Katrina struck New Orleans, causing major infrastructure damage, death, and displacement [1-3]. Natural disasters can disrupt social connections and cause feelings of frustration and powerlessness [4], which can influence violence levels. Etiologic studies have linked disaster exposure with aggressive behavior increases among youth [5, 6]. Although New Orleans violent crime rates increased post-Katrina [7, 8], population-level changes in youths' aggressive behavior are unknown. Identifying these population-level changes can indicate the necessity of adding violence prevention programs to routine post-disaster school mental health services.

METHODS

Data

Data from the New Orleans Youth Risk Behavior Survey (YRBS) were used. These biennial surveys examine the prevalence of health behaviors among high-school-attending youth (ages 12-18). In New Orleans, students completed anonymous scantron surveys in classrooms that were randomly selected within regular public high schools in Spring 2003 (pre-Katrina, 61% overall response rate [ORR]), Spring 2005 (pre-Katrina, 60% ORR), and Fall 2007 (post-Katrina, 88% ORR). The 2003 data were included to permit comparison of pre-storm and post-storm changes. Data are representative of students attending regular public high schools in New Orleans. The Tulane University IRB deemed the present analysis exempt.

Measures

Violence-related behaviors—Students were asked how frequently they had carried weapons (any and to school), carried guns, and missed school because they felt unsafe during the past 30 days. Frequency of being threatened at school, physical fights (any and at school), and dating violence victimization were assessed for the prior year. Ever experiencing forced sex was also queried. All responses were dichotomized.

Time—Time was the main predictor variable, with dummy variables for the survey administration years.

Demographic controls—Age (continuous), gender, and race/ethnicity (non-Hispanic Black/Other) were included in analyses.

Data Analyses

All analyses were conducted in Stata 10.0 with standard error corrections for clustering within schools and applying population weights. Only observations with complete demographic information were included ($n=5,267$). Wald chi-square tests statistically compared the prevalence of variables across years. After pooling data across years, binary logistic regression models regressed each violence behavior onto demographic controls and indicators for the survey years 2005 and 2007 (2003 as referent). Wald tests of adjusted odds ratios for 2005 (pre-storm) versus 2003 (pre-storm), and 2007 (post-storm) versus 2005 (pre-storm) assessed post-storm behavior changes.

RESULTS

Table 1 presents descriptive and bivariate results. Across years, the sample was about half female and 90% African American, averaging sixteen years of age. Significant differences across years were only observed in missing school due to feeling unsafe (16.3% 2003, 19.3% 2005, 9.1% 2007) and dating violence (13.1% 2003, 20.6% 2005, 22.2% 2007).

Multivariable models (see Table 2) extended bivariate findings and identified whether significant changes occurred pre- or post-Katrina. Results indicate significant post-storm decreases in missing school due to feeling unsafe (AOR 0.45 2007 vs. 2005) and weapon carrying (AOR 0.78, 2007 vs. 2005), and pre-storm increases in dating violence (AOR 1.71 2005 vs. 2003) and forced sex (AOR 1.42 2005 vs. 2003). Although changes were similar across gender and age groups, one racial/ethnic group difference was noted. African American students experienced a significant increase in being threatened at school prior to the storm (AOR 1.49, 2005 vs. 2003), although no significant differences across years were

noted for non-African Americans. Models using non-dichotomized responses did not vary with the presented results (data not shown).

DISCUSSION

Results do not support a population-level surge in violence-related behaviors post-Katrina among high school youth in New Orleans. Observed significant increases happened pre-Katrina; other violence-related behaviors significantly decreased post-Katrina. This contrasts with prior etiologic studies [5, 6], one of which examined externalizing behaviors among children referred to mental health services, and the other which examined reactive aggression among a selective sample of high school students. In both studies, level of storm exposure was quantified, in contrast to the present study where presence in New Orleans in 2007 is a proxy for any storm exposure. Discrepancies could arise from the samples or measures applied; therefore results are not necessarily incompatible. Violent behavior possibly increased among vulnerable subpopulations, such as those with pre-existing mental health issues or greater storm-related trauma - adolescents who are likely to miss school and be excluded from YRBS. Screening for these vulnerabilities and referring adolescents to appropriate services is still advisable.

Stability in youth violence-related behaviors may indicate the success of service and administration changes in New Orleans public high schools post-Katrina. Such changes included a dramatic increase in school security personnel [9] and school-based mental health services, a state takeover of half the public high schools in New Orleans, and an increase in charter schools. However, violence-related behavior stability could also be explained by population composition changes if more vulnerable youths were unable to return to New Orleans post-Katrina. Although racial and socioeconomic characteristics of school attending youth did not vary appreciably across study years based on available indicators in the YRBS and data from New Orleans public schools [10], we cannot rule out other characteristics varying across time. Investigations using other data are needed to explore these factors.

Although this study adds new information through its use of population-based data, there are limitations. First, we were unable to probe the relative importance of various countervailing factors – such as population composition and service changes – due to the YRBS data being de-identified. Second, the school-based sample does not represent experiences of out-of-school youth. Given these youths' likely vulnerabilities, violence possibly did increase among this group post-Katrina. A final limitation is that YRBS violence questions assess neither actual weapon use, nor whether acts are proactive or reactive. Given these measurement issues, further study using alternate data sources might be considered.

In summary, results do not support a population-level post-Katrina surge in violence-related behaviors among New Orleans high school youth, possibly indicating the sufficiency of the post-disaster mental health services offered. However, such behaviors may have increased among vulnerable subpopulations not captured in the YRBS. Further research is warranted on displaced and out-of-school youths to assess needs, and to identify factors that buffered against violence increases among school-attending youth.

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Table 1
Descriptive results: Prevalence Changes in Violence-Related Behaviors of New Orleans
Adolescents (n=5,267)

	Prevalence n (%) ^a			p-value ^b
	2003 (n=1,612)	2005 (n=1,637)	2007 (n=2,018)	
Age, Mean (se)	16.1 (0.11)	16.1 (0.10)	15.8 (0.11)	0.067
Gender (Female)	923 (51.8%)	967 (52.7%)	1083 (50.8%)	0.742
Race				
African American	1396 (91.0%)	1376 (92.0%)	1763 (90.8%)	0.679
Other	216 (9%)	261 (8.0%)	255 (9.2%)	
Past 30 days...				
Carried a weapon ^c	244 (16.3%)	262 (17.4%)	279 (14.1%)	0.055
Carried a weapon to school ^d	91 (6.1%)	83 (5.3%)	91 (4.7%)	0.321
Carried a gun ^e	133 (9.0%)	118 (8.7%)	152 (7.6%)	0.354
Missed school because felt unsafe ^f	266 (16.3%)	301 (19.3%)	174 (9.1%)	<.001
Past year...				
Threatened at school ^g	174 (11.1%)	235 (14.6%)	240 (12.4%)	0.105
Fighting ^h	668 (43.2%)	682 (46.3%)	836 (44.1%)	0.409
Any fights at school ⁱ	351 (22.5%)	324 (21.9%)	368 (20.0%)	0.374
Dating violence ^j	209 (13.1%)	334 (20.6%)	443 (22.2%)	<.001
Ever...				
Forced sex ^k	130 (8.0%)	173 (11.1%)	203 (10.1%)	0.065

^aProportions reflect weighted column percentages

^bWald Chi-square p-values

^cDuring the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club? Zero versus one or more days.

^dDuring the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club on school property? Zero versus one or more days.

^eDuring the past 30 days, on how many days did you carry a gun? Zero versus one or more days.

^fDuring the past 30 days, on how many days did you not go to school because you felt you would be unsafe at school or on your way to or from school? Zero versus one or more days.

^gDuring the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club on school property? Zero versus one or more times.

^hDuring the past 12 months, how many times were you in a physical fight? Zero versus one or more times.

ⁱDuring the past 12 months, how many times were you in a physical fight on school property? Zero versus one or more times.

^J During the past 12 months, did your boyfriend or girlfriend ever hit, slap, or physically hurt you on purpose? No versus yes.

^k Have you ever been physically forced to have sexual intercourse when you did not want to? No versus yes.

Table 2
Multivariable models: Prevalence Changes in Violence-Related Behaviors of New Orleans
Adolescents^a

	2005 vs. 2003			2007 vs. 2005		
	AOR	CI 95%	p-value	AOR	CI 95%	p-value
Overall						
Carried a weapon	1.11	0.82–1.39	0.433	0.78	0.61–0.94	0.020
Carried a weapon to school	0.88	0.55–1.22	0.518	0.88	0.58–1.19	0.473
Carried a gun	1.00	0.66–1.34	0.992	0.86	0.61–1.10	0.287
Missed school because felt unsafe	1.23	0.88–1.58	0.161	0.45	0.33–0.56	<.001
Fighting at school	0.97	0.76–1.18	0.785	0.87	0.67–1.08	0.254
Dating violence	1.71	1.35–2.07	<.001	1.16	0.92–1.39	0.155
Forced sex	1.42	0.99–1.84	0.022	0.92	0.68–1.16	0.533
Race-Stratified^b						
Threatened at school						
African American	1.49	1.04–1.93	0.010	0.86	0.62–1.09	0.253
Other	0.81	0.34–1.28	0.253	0.65	0.23–1.08	0.195
Fighting						
African American	1.20	0.98–1.42	0.052	0.89	0.73–1.04	0.180
Other	0.69	0.36–1.02	0.122	0.82	0.43–1.22	0.422

^a Adjusted for respondent age, race/ethnicity and gender.

^b interaction terms between race and year statistically significant