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Examining longitudinal associations between future orientation and multiple forms of youth violence perpetration

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Abstract

Purpose: Future orientation, defined as hopes and aspirations for the future, is gaining promise as a cross-cutting protective factor against youth violence. This study assessed how future orientation longitudinally predicted multiple forms of violence perpetration among minoritized male youth in neighborhoods made vulnerable by concentrated disadvantage.

Methods: Data were drawn from a sexual violence prevention trial among 817 predominately African American male youth, ages 13 to 19, residing in neighborhoods disproportionately impacted by community violence. We used latent class analysis (LCA) to create baseline future orientation profiles of participants. Mixed effects models examined how future orientation classes predicted multiple forms of violence perpetration (i.e., weapon violence, bullying, sexual harassment, non-partner sexual violence [NPSV], and intimate-partner sexual violence [SV]) at 9-month follow-up.

Results: LCA yielded four classes, with nearly 80% of youth belonging to moderately-high and high future orientation classes. We found significant overall associations between latent class and weapon violence, bullying, sexual harassment, NPSV, and SV (all $p < 0.01$). While patterns of association differed across each type of violence, violence perpetration was consistently highest among youth in the low-moderate future orientation class. Compared to youth in the low future orientation class, youth in the low-moderate class had higher odds of bullying (OR 3.51, 95% CI: 1.56–7.91) and sexual harassment perpetration (OR 3.44, 95% CI: 1.49–7.94).

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Conclusions: The longitudinal relationship between future orientation and youth violence may not be linear. Greater attention to nuanced patterns of future orientation may better inform interventions seeking to harness this protective factor to reduce youth violence.

Keywords

Adolescent; Violence Perpetration; Weapon Violence; Bullying; Sexual Harassment; Sexual Violence; Future Orientation; Latent Class Analysis; Longitudinal

Introduction

Interpersonal violence continues to be a serious public health problem that impairs adolescent wellbeing.¹ Nearly half (44%) of teenagers experienced at least one form of violence in 2019.² Interpersonal violence disproportionately impacts minoritized youth, particularly African American males living in urban neighborhoods.³ High exposure to community violence can reciprocally lead to greater levels of violence perpetration and, in turn, health-affecting consequences for youth.^{3,4}

Future orientation, having hopes and aspirations for one's future, is associated with multiple prosocial outcomes⁵ and is gaining support as a potential cross-cutting protective factor for adolescent wellbeing. Future orientation is a complex latent variable that entails three general domains: expectations (i.e., impressions of one's future), aspirations (i.e., intentions for the future), and planning (i.e., awareness and ability to act on one's aspirations).⁵ Youth with high future orientation are less likely to report substance use, health-harming sexual activity, and suicidal thoughts and attempts.⁶⁻⁹ Reciprocally influenced by self efficacy (i.e., having confidence in one's own abilities), positive future orientation is associated with improved decision-making skills and decreased engagement in health-affecting risk behavior.¹⁰

There is a growing body of scholarship supporting a potentially protective relationship between positive future orientation and interpersonal violence. Cross sectional studies have demonstrated inverse associations between future orientation and weapon violence, bullying, and sexual/dating violence.¹¹⁻¹⁵ Limited data also suggest this protective association between future orientation and violence may hold true longitudinally. Stoddard et al. showed that higher levels of future orientation were associated with lower mean violence perpetration scores among African American youth living in urban neighborhoods.¹² A related area of scholarship on adolescent delinquency has linked lower levels of future orientation with increased risk of delinquency.¹⁰ A possible rationale for these findings is that individuals who are focused on the present rather than on envisioning and actualizing on future goals are less likely to consider longer-term consequences of their current actions.

Much of the research examining future orientation and violence has utilized cross-sectional designs and focused on populations at lower risk for both exposure to and involvement in violence.^{6,9} In addition, future orientation has often been operationalized using binary measures and measured through more deficit-based survey items (i.e., "expectancy of living to age 25")¹⁶ rather than strengths-based measures.^{11,12,16}

We sought to extend this scholarship to better understand longitudinal associations between future orientation and multiple forms of violence among youth in neighborhoods where both exposure to and direct involvement in violence are high. Using a latent class approach, we categorized baseline future orientation classes among 817 youth who predominantly identified as Black or African American residing in neighborhoods with high levels of community violence across Pittsburgh, Pennsylvania. We analyzed how youths' baseline future orientation class related to violence perpetration over time across multiple domains (i.e., weapon, community, and sexual violence (SV)). We hypothesized that adolescents with higher levels of future orientation at baseline would proportionately perpetrate less violence over 9 months across all forms of violence.

Methods

Study Setting

The current study leverages longitudinal data from a community-based, cluster randomized trial of a sexual violence prevention program that engaged male adolescents between the ages 13 and 19 (n=866) recruited through youth-serving community agencies across twenty neighborhoods in Pittsburgh, PA with high levels of community violence.¹⁷ Neighborhoods were randomized to either Manhood 2.0, a gender-transformative sexual violence prevention program, or a job-readiness program. Ongoing community partnerships and respondent-driven sampling were used to recruit participants consecutively, year-round from July 2015 to June 2017. All programming was conducted in participants' respective neighborhoods.

Participants completed anonymous baseline surveys about their perceived future orientation and multiple forms of violence perpetration using validated measures. Follow-up surveys completed 9-month post-intervention reassessed violence perpetration. Full details of the study procedure have been previously described²⁴, and all study protocols were approved by the University of Pittsburgh's Institutional Review Board.

Measures

Future Orientation (Baseline)—Participants were asked to rate themselves on seven future orientation items that encompassed excitement about one's future, aspirational goal setting, and contributions to one's community. Each item asked a participant to rate their response on a 5-point Likert scale (1 = "Not at all like me", 5 = "Exactly like me"). Items were adapted from the California Healthy Kids Survey²⁵ and have excellent reliability (Cronbach's $\alpha = 0.93$) among study participants (Supplemental Table 1).

Violence Perpetration (Baseline and 9-month follow-up)

Weapon Violence.²⁶ Participants were asked how many times in the past 9 months they threatened or physically injured someone with a weapon (i.e., gun, knife, club; 2 items) which was operationalized as any/none across the 2 items.

Bullying.²⁷ Participants indicated how often they had engaged in the following behaviors in the past 3 months: make fun of someone, call someone names in a hurtful way, or spread rumors about someone; push, shove, trip, or spit on someone; and exclude someone from

activities on purpose (3 items). A shorter follow-up interval was used to reduce the chance of a ceiling effect given higher prevalences of bullying among adolescents compared to other violence outcomes. Any affirmative response across the 3 items was categorized as bullying perpetration (any/none).

Sexual Harassment.¹⁷ Participants indicated whether they made unwelcomed physical or verbal sexual advances against someone else in the past 9 months (i.e., touching or grabbing in a sexual way, making unwelcome sexual comments or gestures, making or spreading sexual drawings or rumors (5 items; operationalized as any/none).

Non-Partner SV.¹⁷ Participants indicated how often they physically hurt, threatened, or pressured someone else they were not in a relationship with into unwanted sexual activity without their consent in the past 9 months (2 items; operationalized as any/none).

Intimate partner SV.¹⁷ Participants indicated how often they physically hurt, threatened, or pressured someone else they were in a relationship with into unwanted sexual activity without their consent in the past 9 months (3 items; operationalized as any/none).

Demographic variables—Age in years was measured by self-report. Participants were also asked to identify their race (American Indian or Alaska Native; Asian; Black or African American; Native Hawaiian or Other Pacific Islander; White or Caucasian; Multi-racial; and Other), ethnicity (Hispanic or Latino), and parental/caregiver education level (some high school or less; graduated high school or finished GED; some college or technical school; graduated college or higher).

Analytic Strategy

Latent Class Analysis—All analyses were conducted in Stata 16.1. Using baseline survey data, we performed a latent class analysis (LCA), a statistical technique used to classify each participant's future orientation at baseline into optimal clustered groups or "classes".^{19–20} An LCA was preferred over other statistical methods (i.e., factor analysis) because all available participant data could be collectively used for analyses, improving efficiency over a factor analysis approach that would subdivide the dataset for exploratory and confirmatory analysis. Each of the seven future orientation items were used as a separate continuous variable for latent class prediction. Participants who answered at least five of the seven future orientation items at baseline were included in the LCA and ultimately the final analysis. This inclusion criterion was selected to balance the goals of including items measuring multiple domains of future orientation and of maximizing use of available data based on the patterns of nonresponse. The optimal number of classes were chosen based on the lowest Bayesian Information Criterion (BIC) and Akaike Information Criterion (AIC) fit indices, membership prevalence within classes utilizing a 5% minimum threshold¹⁴, and overall interpretability. Class names were created after finalizing the best fitting solution. Sensitivity analyses examined LCA classes among participants who answered at least one future orientation item and among participants who answered all seven items.

Longitudinal Analysis—We used descriptive statistics to summarize baseline demographics as well as the prevalence of each form of violence perpetration at baseline and 9-month follow-up for all future orientation classes. Group differences in demographic variables were assessed via Pearson’s chi-square tests or Fisher’s Exact tests (categorical) and one-way analysis of variance tests (continuous). We then used mixed effects logistic regression to examine how baseline future orientation class related to each form of violence perpetration over time (baseline to 9-month follow-up). This type of modeling was chosen given that mixed effects logistic regression maximizes use of all available data at each time point and can account for neighborhood clustering. Separate models examined the association between future orientation latent class and violence trajectory by testing the interaction between latent class, violence, and time.

Models were adjusted for age, intervention group (Manhood 2.0 intervention vs. control), race and ethnicity (non-Hispanic White, non-Hispanic Black, and Hispanic/Multiracial/Other), and parental education (graduating vs. not graduating high school) and accounted for repeated measures among participants and clustering at the neighborhood level (random effects for within-person and within-neighborhood clustering). These covariates were selected *a priori* based on the parent study²³ and were included in all models.

Results

Latent Class Analysis

A total of 817 adolescents were included in the LCA and comprised the analytic sample. Compared to youth who completed both baseline and follow-up surveys (n=605), youth who completed only the baseline survey (n=212) were slightly older ($p < 0.01$) and more likely to report perpetrating weapon violence ($p < 0.01$). LCA fit indices were examined for a two-class through five-class solution (Table 1). The overall mean score and marginal means of each future orientation item for each solution are presented in Supplementary Table 1 and 2, respectively. Despite having the lowest AIC and BIC, the five-class solution was not optimal as it yielded a moderate-high future orientation class that did not meet the 5% class membership threshold (Table 1) and had marginal means for multiple future orientation items being lower than preceding future orientation classes (Supplementary Table 2). We opted to proceed with the four-class model as it had the next lowest AIC and BIC while also having appropriate membership and interpretability. Results of sensitivity analyses defining LCA classes among participants who answered at least 1 future orientation item (n=824) and among participants who answered all 7 items (n=787) were consistent with those presented.

Profiles of Future Oriented Youth

Future orientation latent classes range from 1 to 4, with levels of future orientation increasing with each successive class. Class 1 (“low future orientation”) contains 53 members (6.5%), Class 2 (“low-moderate future orientation”) contains 123 members (15.1%), Class 3 (“moderately-high future orientation”) contains 273 members (33.4%), and Class 4 (“high future orientation”) contains 368 members (45%). Of note, the marginal means increased from Class 1 to Class 4 across all 7 individual future orientation items.

Additionally, examining mean scores within a given class, the mean for each item was similar within each respective future orientation class (Supplementary Table 2).

Table 2 presents descriptive statistics for the full sample and by future orientation class. Mean participant age was 15.5 years. Most participants identified as Black, Non-Hispanic (74%). Nearly half of participants' parents/caregivers did not graduate from high school (43%). Comparing demographics by latent class, age did not significantly differ between the four classes. Youth who were more future oriented (i.e., belonging in moderately high and high classes) were more likely to self-identify as non-Hispanic Black. Youth in the lowest future orientation class had the highest percentage of parents/caregivers who did not graduate from high school (73%).

Class membership and violence perpetration risk

Table 3 presents the prevalence of each form of violence perpetration at baseline and 9-month follow-up for the analytic sample and by future orientation class. The two most common forms of violence perpetrated at baseline and at follow-up were bullying (64% at baseline; 51% at follow-up) and sexual harassment (50% at baseline; 40% at follow-up). In addition, the overall prevalence of each form of violence decreased from baseline to follow-up except for non-partner SV.

The highest prevalence for all forms of violence at both timepoints were perpetrated by participants in the low-moderate future orientation class. For example, youth in the low-moderate future orientation class had a greater prevalence of sexual harassment perpetration at baseline (64.2%) compared to their peers in the low, moderately high, and high future orientation classes (35%, 51%, and 46%, respectively). While the relative proportion of youth perpetrating sexual harassment decreased in all four future orientation classes over time, youth in the low-moderate class still had the highest percentage of sexual harassment perpetration (58%) compared to all other classes at the 9-month follow up (low 36%, moderately high 34%, and high 39%).

Table 4 presents the results for the mixed effects logistic regression that assessed how future orientation class membership predicted each form of violence perpetration from baseline to follow-up. We first evaluated the association between future orientation latent class and violence perpetration trajectory by testing for significant interaction between future orientation, each form of violence perpetration, and time. We found no significant effect of future orientation latent class on the trajectories of violence perpetration over time (adjusted model interaction p values: weapon violence ($p = 0.674$); bullying ($p = 0.114$); sexual harassment ($p = 0.080$); non-partner SV ($p = 0.435$); intimate partner SV ($p = 0.190$)).

However, across all adjusted models, there were significant overall associations between future orientation latent class and each form of violence perpetration, including weapon violence ($p=0.0001$), bullying ($p=0.0016$), sexual harassment ($p=0.0005$), NPSV ($p=0.0053$), and IPSV ($p=0.0087$).

After identifying significant overall relationships between future orientation latent class and violence perpetration, we compared the odds of violence perpetration among individual

latent classes (using the low future orientation class as the reference group) for each form of violence (Table 4). We focus on odds ratio patterns rather than pairwise comparisons of significance. Compared to the low future orientation class, youth belonging to the high future orientation class were less likely to perpetrate weapon violence (aOR=0.41, 95% CI:[0.18, 0.99]). However, contrary to our hypothesis, youth in any of the higher future orientation classes were more likely to perpetrate bullying relative to those in the low future orientation class, although differences between groups did not reach statistical significance (Moderate-High=aOR 1.95, 95% CI:[0.93–4.10]; High: aOR=1.41, 95% CI:[0.69, 2.89]). Compared to youth in the low future orientation class, youth in higher future orientation classes were more likely to perpetrate sexual harassment (Low-Moderate: aOR=3.44, 95% CI:[1.49, 7.49]; Moderate-High: aOR=1.24; 95% CI:[0.58, 2.69]; High: aOR=1.20; 95% CI:[0.56, 2.53]). Youth in the low-moderate future orientation class were the most likely to report perpetrating any of the violence outcomes studied.

Discussion

Among a sample of 817 predominantly Black male adolescents living in neighborhoods with high exposure to community violence, our study examined how future orientation predicted multiple forms of violence perpetration over 9-month follow-up. We utilized a latent class analysis (LCA) to cluster individuals with similar profiles of future orientation. This LCA yielded four classes that ranged from low to high future orientation, with nearly 80% of youth belonging to the moderately-high and high future orientation classes. The prevalence of high future orientation in our sample aligns with previous literature,^{12–13,15} although comparisons across studies are challenging given different measures of future orientation. Levels of violence perpetration were high across multiple forms. Except for weapon violence, use of violence among participants in this study was higher than is reported in nationally representative studies.^{2,22–23} Differences in reporting intervals for violence outcomes, participant age range, and structural inequities that constrain access to resources and impact both exposure to and involvement in violence among participants in the current study may explain these differences.^{3,4}

We found significant associations between future orientation latent class and multiple forms of violence, including weapon violence, bullying, sexual harassment, non-partner SV, and intimate partner SV, with patterns differing across types of violence. Compared to youth in the low future orientation class, those in the high future orientation class were significantly less likely to perpetrate weapon violence. This finding is consistent with previous work that has demonstrated an inverse relationship between future orientation and weapon violence both in cross-sectional^{6,11,15} and longitudinal designs¹² as well as with studies of future orientation and adolescent delinquency.¹⁰ Interestingly, bullying patterns diverged from what has been found in previous studies.^{13–14} Compared to youth in the low future orientation class, youth belonging to the low-moderate class were more likely to report bullying someone else. Prior studies included younger participants and measured past 30-day rather than past 3-month bullying perpetration, which could explain differences. Given adolescents value their belonging within peer networks^{24, 28}, it is also possible that these patterns reflect use of bullying to promote social status.

This is the first study, to our knowledge, to examine how future orientation relates longitudinally to any form of sexual violence perpetration. Similar to the patterns that emerged with bullying perpetration, we found that compared to youth in the low future orientation class, youth belonging to higher future orientation classes were more likely to report perpetrating sexual harassment, with odds in the low-moderate class reaching statistical significance. Moreover, youth in the low-moderate future orientation class were the most likely to report perpetrating all forms of SV examined. The mechanisms behind these associations are unclear and warrant further examination. One explanation could be that youth perceive engaging in SV and harassment in interpersonal relationships as not having similar consequences for future goals and aspirations as compared to weapon carrying and weapon use. Peer/family norms, past violence victimization, and legal ramifications are additional contextual factors that can influence youth violence perpetration. Thus, sexual, gender, and racial socialization may be stronger drivers of sexual and relationship behaviors than future orientation. Mixed methods longitudinal studies may be best positioned to explore these complex associations between future orientation and SV over time, as well as identify additional protective factors that may mitigate against SV.

A unique pattern that emerged from this study was that across all forms of violence, youth in the low-moderate future orientation class were the most likely to perpetrate violence. Additional studies incorporating LCA methods may aid understanding of the nuanced relationship between future orientation and violence. Exploring these association profiles and links to violence can also inform interventions seeking to foster future orientation as a strategy to reduce youth violence.

An important consideration in interpreting the current findings is the potential for complex and dynamic interactions between future orientation, violence perpetration, and structural factors that constrain access to resources (i.e., stable housing, education). Structural drivers of adolescent health, including poverty and systemic racism, may influence youths' ability to shape and actualize on their future orientation. Prior studies have demonstrated that youth who have been exposed to or directly experienced more violence are more likely to experience hopelessness^{29–31} and less likely to envision a positive future for themselves.^{9,13–14} Additionally, youth with lower levels of future orientation have greater odds of engaging in delinquency.^{10, 32–33} A study by Craig et. al. found that children with more adverse childhood experiences had lower future orientation and higher number of rearrests, but that lower future orientation did not necessarily mediate the relationship between adverse experiences and rearrests.³⁴ These results align with our findings of a potentially more complicated interplay between future orientation and violence perpetration among youth residing in neighborhoods made vulnerable by structural inequities. Large scale studies across varying neighborhood contexts are needed to understand how structural factors intersect with and influence the development of future orientation and violence perpetration over time.

This study has several limitations. The longitudinal design only included two timepoints, and we are unable to assess longer-term associations or reciprocal influences between future orientation and violence. Data were drawn from a community-based sexual violence prevention trial and participating in either intervention or control programming could impact

levels of violence perpetration over time. Survey data were self-reported, with about a quarter of responses not completed at follow-up, which are subject to social desirability and attrition biases, respectively. The parent study did not assess violence victimization at these timepoints and thus we are unable to examine intersections between direct and vicarious victimization, future orientation, and violence perpetration. The relatively small size of the low future orientation group (n=53) could affect the precision of observed associations. Lastly, this study was conducted among predominantly Black adolescent males residing in neighborhoods with high levels of community violence. Results may not generalize across genders, other communities, or geographic contexts.

The study also has notable strengths. It utilized an asset-based measure of future orientation that encompasses key domains of this complex latent variable. The granularity of the latent class approach adds nuance to our understanding how future orientation longitudinally relates to a variety of different forms of violence perpetration among male youth in low-resource communities. Lastly, this study is the first, to our knowledge, to examine how future orientation longitudinally predicts SV perpetration.

This study highlights the importance of continuing to examine strengths-based approaches to protecting adolescents who are both exposed to and at risk for involvement in violence. Additional studies are needed to address the structural drivers underpinning these associations for minoritized youth, including the multi-level factors that contribute to differing levels of future orientation, as well as the larger contexts in which these patterns of violence are occurring.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Implications and Contributions

This LCA used a nuanced operationalization of future orientation among male youth in disadvantaged neighborhoods and provided a novel evaluation of how this protective factor related to multiple forms of violence. Studying the dynamics of future orientation can better tailor interventions that seek to reduce multiple forms of youth violence

Table 1.

Fit Indices of Future Orientation Latent Class Models

	Two-Class Model [n (%)]	Three-Class Model [n (%)]	Four-Class Model [n (%)] ^a	Five-Class Model [n (%)]
Class I	196 (24%)	71 (9%)	53 (6%)	53 (6%)
Class II	621 (76%)	343 (42%)	123 (15%)	129 (16%)
Class III	N/A	403 (49%)	273 (33%)	248 (30%)
Class IV	N/A	N/A	368 (45%)	33 (4%)
Class V	N/A	N/A	N/A	354 (43%)
AIC	15471.4	14111.0	13522.5	13407.2
BIC	15574.9	14252.1	13701.3	13623.6

^a = Optimal model chosen for further analysis

Table 2. Baseline Demographic Characteristics of Participants, Overall and by Future Orientation Class

	Total (N=817)	Low (n=53)	Low-Mod (n=123)	Mod-High (n=273)	High (n=368)	p-value
Group, n (%)	Control	32 (61%)	52 (42%)	116 (42%)	177 (48%)	0.069 ^a
	Intervention	21 (40%)	71 (58%)	157 (58%)	191 (52%)	
Age, Average ± SD	15.5±1.6	15.5±1.7	15.3±1.5	15.5±1.7	15.5±1.6	0.431 ^a
Race, n (%)	Non-Hispanic Black	25 (49%)	80 (65%)	210 (78%)	286 (78%)	<.001 ^b
	Non-Hispanic White	1 (2%)	7 (6%)	13 (5%)	8 (2%)	
	Hispanic, Multiracial, Other	25 (49%)	36 (29%)	45 (17%)	72 (20%)	
Caregiver Education, n (%)	< High School	37 (73%)	70 (58%)	112 (42%)	154 (43%)	<.001 ^a
	High School	14 (27%)	50 (42%)	153 (58%)	206 (57%)	

^a Pearson's chi-square test or one-way ANOVA test

^b Fisher's exact test

Table 3. Prevalence of Violence Perpetration for each Latent Class at Baseline and Follow-Up

Timepoint	Baseline (N = 817)				9-Month Follow-Up (N = 605)					
	Low	Low-Moderate	Moderate-High	Highly	Overall	Low	Low-Moderate	Moderate-High	High	Overall
Latent Class										
Weapon Violence	17/51 (33.3%)	55/120 (45.8%)	78/270 (28.9%)	97/360 (26.9%)	247/801 (30.8%)	9/32 (28.1%)	33/81 (40.7%)	40/192 (20.8%)	57/281 (20.3%)	139/586 (23.7%)
Bullying	21/51 (41.2%)	90/121 (74.4%)	187/271 (69.0%)	224/368 (60.9%)	522/811 (64.4%)	17/36 (47.2%)	52/82 (63.4%)	101/195 (51.8%)	132/283 (46.6%)	302/596 (50.7%)
Sexual Harassment	18/52 (34.6%)	77/120 (64.2%)	138/269 (51.3%)	166/362 (45.9%)	399/803 (49.7%)	13/36 (36.1%)	46/80 (57.5%)	65/192 (33.9%)	110/282 (39.0%)	234/590 (39.7%)
NPSV ^a	2/53 (3.8%)	11/118 (9.3%)	12/270 (4.4%)	17/364 (4.7%)	42/805 (5.2%)	3/34 (8.8%)	20/83 (24.1%)	12/191 (6.3%)	29/281 (10.3%)	64/589 (10.9%)
IPSV ^b	3/53 (5.7%)	15/118 (12.7%)	8/270 (3.0%)	15/358 (4.2%)	41/799 (5.1%)	1/32 (3.1%)	6/77 (7.8%)	10/190 (5.3%)	7/274 (2.6%)	24/573 (4.2%)

^aNPSV = Non-Partner Sexual Violence (self-report of how often participant physically hurt, threatened, or pressured someone else they were not in a relationship with into unwanted sexual activity without their consent in the past 9 months).

^bIPSV = Intimate partner sexual violence (self-report of how often participant physically hurt, threatened, or pressured someone else they were in a relationship with into unwanted sexual activity without their consent in the past 9 months).

Table 4. Using Baseline Future Orientation Class to Predict Multiple Forms of Violence Perpetration Over Time^a

Violence Outcome	Analytic Sample (n)	Low	Low-Moderate Odds Ratio [95% CI] (p-value)	Moderate-High Odds Ratio [95% CI] (p-value)	High Odds Ratio [95% CI] (p-value)	Associations Between Latent Class and Outcome	Testing Interaction between Latent Class and Time
Weapon Violence	786	Reference	1.56 [0.63, 4.02] (0.345)	0.45 [0.20, 1.13] (0.077)	0.41 [0.18, 0.99] (0.040)	<i>p</i> = 0.0001	<i>p</i> = 0.674
Bullying	789	Reference	3.51 [1.56, 7.91] (0.002)	1.95 [0.93, 4.10] (0.077)	1.41 [0.69, 2.89] (0.350)	<i>p</i> = 0.0016	<i>p</i> = 0.114
Sexual Harassment	786	Reference	3.44 [1.49, 7.94] (0.004)	1.24 [0.58, 2.69] (0.579)	1.20 [0.56, 2.53] (0.641)	<i>p</i> = 0.0005	<i>p</i> = 0.080
NPSV ^b	787	Reference	3.08 [0.88, 10.74] (0.078)	0.80 [0.23, 2.77] (0.723)	1.18 [0.36, 3.88] (0.782)	<i>p</i> = 0.0053	<i>p</i> = 0.435
IPSV ^c	784	Reference	2.70 [0.79, 9.25] (0.114)	0.94 [0.27, 3.24] (0.921)	0.83 [0.25, 2.78] (0.767)	<i>p</i> = 0.0087	<i>p</i> = 0.190

^aAll models adjusted for participant age, race (Non-Hispanic, Black; Hispanic, Black; Hispanic, Multiracial, Other), and caregiver education.

^bNPSV = Non-Partner Sexual Violence (self-report of how often participant physically hurt, threatened, or pressured someone else they were not in a relationship into unwanted sexual activity without their consent in the past 9 months).

^cIPSV = Intimate partner sexual violence (self-report of how often participant physically hurt, threatened, or pressured someone else they were in a relationship with into unwanted sexual activity without their consent in the past 9 months).