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Using the Theory of Planned Behavior to Predict Aggression and Weapons Carrying In Urban African American Early Adolescent Youth

Nadine M. Finigan-Carr, PhD¹, Tina L. Cheng, MD, MPH², Andrea Gielen, ScD, ScM², Denise L. Haynie, PhD, MPH³, and Bruce Simons-Morton, EdD, MPH³

¹University of Maryland, Baltimore, MD USA

²Johns Hopkins University, Baltimore, MD USA

³Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, MD, USA

Abstract

Aggressive and weapons carrying behaviors are indicative of youth violence. The Theory of Planned Behavior (Ajzen, 1991) is used in the current analysis to improve our understanding of violence-related behaviors. We examine the influence of perceived behavioral control (self-control and decision making) as a part of the overall framework for understanding the risk and protective factors for aggressive behaviors and weapons carrying.

As the baseline assessment of an intervention trial, survey data were collected on 452 sixth grade students (50% girls; 96.6% African American; mean age 12.0) from urban middle schools. 18.4% carried a weapon in the prior 12 months with boys more likely to carry a weapon than girls (22.5% vs. 14.2%, $p=0.02$). 78.4% of youth reported aggressive behaviors with no significant differences found between girls (81.3%) and boys (75.5%). In logistic regression models, having peers who engage in problem behaviors was found to be a significant risk factor. Youth with peers who engaged in numerous problem behaviors were 5 times more likely to be aggressive than those who reported little or no peer problem behaviors. Teens who reported that their parents opposed aggression (OR: 0.76; CI: 0.66, 0.88) and who used self-control strategies (OR: 0.59; CI: 0.39, 0.87) were found to report less aggressive behaviors. For weapons carrying, being a girl (OR: 0.56; CI: 0.32, 0.97) and self-control (OR: 0.52; CI: 0.29, 0.92) were protective factors.

This study demonstrated that the TPB may provide a useful framework for the development of violence prevention programs.

Keywords

youth violence; aggression; Theory of Planned Behavior; perceived behavioral control; self-control; adolescence

INTRODUCTION

Aggressive behaviors, defined as behaviors intended to hurt or harm others whether verbal or physical (Orpinas & Frankowski, 2001), are seen as predictors of more serious youth violent behaviors (Stueve, O'Donnell & Link, 2001; Hemenway & Miller, 2004).

Researchers suggest that aggressive behavior in early adolescence can place youth on a trajectory that involves antisocial (e.g., truancy, substance abuse) and delinquent behaviors in later adolescence and young adulthood, including more serious forms of violence (Kokko, Tremblay, Lacourse, Nagin, & Vitaro, 2006). Aggressive behavior has been linked to poor academic achievement among African American early adolescents (Wright & Fitzpatrick, 2006) leading to school dropout (Kokko et al., 2006). Weapons carrying has been linked to decreased life satisfaction and increased risk for suicidal ideation in adolescents (Muula, Rudatsikira, and Siziya, 2008; Valois, Paxton, Zullig & Huebner, 2006), and delinquency and vandalism (Dijkstra, et al, 2010).

Family can be a critical asset for the positive development of early adolescents in low income, urban, African American communities. Families can help mitigate the effects of negative economic and social conditions on adolescent aggressive behavior. Parents reported frequent use of ethnic socialization and emphasized attaining positive socialization goals, pursuing educational success, and fitting into society (Hill & Madhere, 1996; Lamborn & Felbab, 2003). This type of parental support plays a positive role in the lives of urban youth particularly in relation to their cognitive development and behavior within the school environment (Benhorin and McMahon, 2008).

Peer influences grow dramatically during adolescence, as youth aggregate in groups around common interests and values (Snyder, Dishion, & Patterson, 1986). For aggressive behaviors, research has found correlations between peer fighting and an individual's behaviors (Espelage, Holt, & Henkel, 2003); as well as between perceptions of peer fighting and an individual's behaviors (Smith Flay, Bell & Weissberg, 2001).

For youth who live in economically disadvantaged communities, witnessing community violence has been associated with decreased social, emotional, and cognitive development. In early adolescent African American youth, this can lead to greater risk taking and aggressive behaviors (Jipguep & Sanders-Phillips, 2003); the development of retaliatory attitudes (Copeland-Linder et al., 2007); and beliefs that support aggressive responses (Bradshaw & Garbarino, 2004).

The Theory of Planned Behavior (TPB; Ajzen & Fishbein, 1980) posits that intention and actual behavior are influenced by norms and attitudes. In addition, TPB emphasizes the importance of perceived behavioral control (PBC), which refers to people's perceptions of their ability to perform given behaviors. Ajzen has described PBC as 'the person's belief as to how easy/difficult performance of the behavior is likely to be' (Ajzen & Madden, 1986). However, perceptions of 'under my control/not under my control' and 'easy/difficult' are not necessarily the same concepts (Christopher, 2010) and may be two dimensions of the overall construct of PBC. The TPB can be used to examine how interpersonal processes and

primary groups - including family, friends, and peers – help to provide social identity, support and role definition.

The purpose of this study is to examine the extent to which a youth perceives that he or she is able to control his or her behavior. Adolescents in aggressive situations who perceive themselves as deficient in time, skills, or other key conflict resolution resources may not consider problem solving or not fighting to be a feasible strategy (Shapiro & Watson, 2000). Instead, they perceive themselves as having insufficient control over their behaviors in aggressive situations, which may lead them to commit aggressive acts.

This study examined whether an adolescent's attitudes and beliefs about aggressive behaviors, subjective norms derived from peer behaviors and parental expectations, and PBC affect aggressive behaviors or weapons carrying behaviors by that adolescent in a sample of urban African-American middle school aged youth.

Guided by the TPB, this paper addresses the following research questions:

1. What factors influence an adolescent's aggressive behaviors and their weapons carrying?
2. What is the influence of PBC on an adolescent's aggressive behaviors and weapons carrying?

METHODS

Participants

Participants were students enrolled in Baltimore City Public Schools. This school district is predominantly African American (86.6%) with 83.5% of students eligible for free and reduced-price meals and a 66% high school graduation rate (Alonso, Duke & English, 2010). Study participants were 452 non-repeating, mainstreamed sixth graders attending three urban middle schools on probation for classification as “persistently dangerous” under the State of Maryland's No Child Left Behind Act policy (MSDE, 2005). A school is identified as “persistently dangerous” based on measures of suspension and expulsion rates (Jones, Bradshaw, et al., 2009).

Procedures

This study utilizes data gathered during an intervention trial of an aggression prevention program. The purpose of the program was to increase school engagement and prevent or reduce aggressive behavior among early adolescents. Parental consent was obtained for forty-seven percent (n=539) of the total eligible population (Figure 1).

Study participants completed pre- and post-surveys via an audio computer assisted self-interview (ACASI) in the schools while proctors circulated to answer any questions that arose. The surveys were administered within a week prior to and post intervention sessions, which were held over the course of a school semester, approximately five months apart. All youth for whom consent to participate in the intervention had been obtained were included

in this study, regardless of treatment status, as there was no treatment effect. The study was approved by the Institutional Review Board of the investigators' institutions.

Measures

Independent Variables (Measured at Baseline)—Attitudes toward the behavior was measured by the “Acceptance of Deviant Peer Behaviors” scale; perceived norms were measured with both the “Friend Behavior Influence” (Problem and Prosocial Behaviors) index and “Perception of Parental Attitudes About Fighting” scale; and, PBC was measured with two scales representing “Decision Making” and “Self-Control.” All scales and indices were coded so that an increased score indicated more of that behavior or trait. When scale scores were derived, missing items were replaced by the individual's mean non-missing scale score. This is a reasonable method of imputation as suggested by Karl L Wuensch (2009). If missing more than 20% of component items, the scale was considered missing. Overall, there was less than 3% missingness. The demographic variables included as control variables were gender, school, enrollment cohort (year the student was enrolled in the intervention), intervention status (treatment and control) and family structure (two parents/adults and single parent/adult). Figure 2 provides a visual representation of the relationship of all variables.

Acceptance of Deviant Peer Behaviors: This eight item scale was developed by Simons-Morton et al., (1999) to provide a psychosocial indicator of adolescents' attitudes towards deviant peer behaviors. Due to the skewed distribution of the scale, responses were combined into a single dichotomous score contrasting agreement with one or more items with disagreement with all items ($\alpha = 0.902$).

Friend Behavior Influence: Peer norms were measured with this ten-item index (Simons-Morton et al., 1999) that measures an adolescent's perception of peer behavior. Comprised of five problem peer behavior and five prosocial peer behavior questions, participants were asked to report “How many of your 5 closest friends ...”

Problem Behaviors – Smoke cigarettes; Drink alcohol; Talk/Act disrespectful to teachers; Get in physical fights with other kids; Tell stop liking/Be friends with someone ($\alpha = 0.710$)

Prosocial Behaviors - Do volunteer work; Pay attention in school; Work hard in school; Stay out of trouble; Participate in activities with adults in charge ($\alpha = 0.777$)

This provides the number of friends (0–5) who do multiple behaviors providing a range of friend behavior influence. Each friend could potentially commit between 0–25 total behaviors. Based on the distribution for each index, the scores were split by tertiles into low, middle, and high.

Perception of Parental Attitudes About Fighting: Parental norms were measured using a twelve-item scale adapted from Orpinas, Murray and Kelder (1999) referred to as the student's perception of parental attitudes toward fighting. The scale contains frequent parental sayings about fighting. Responses were on a Likert scale from Strongly Disagree to Strongly Agree. Based on the distribution of the scores, participants were classified into one

of three groups: 1) Those who perceived their parents to endorse aggression (Disagree with all the peaceful solutions and agree with all items supporting conflict); 2) Those who perceived their parents to be neutral towards aggression (neither agree nor disagree with any items); and, 3) Those who perceived their parents to be against aggression (Agree with the peaceful solution items and disagree with the fighting items). The internal consistency of the original scale (Cronbach's alpha) was 0.81.

PBC: Two measures of PBC (Decision Making and Self-Control) were administered as a part of the baseline survey. Students were asked to “think about the last month or so” and identify how much they agreed or disagreed. Due to highly skewed distributions, for Decision Making and Self Control separately, a single dichotomous variable was created which contrasted responses indicating disagree on all items with agree with one or more items.

Decision Making: Adapted from the National Longitudinal Study of Adolescent Health (Harris et al., 2009), this six-item scale was used to assess the perceived difficulty of the use of decision making strategies ($\alpha = 0.646$). Items were: I come up with different ways to solve a problem; I think before I act; I come up with clear steps to reach a goal; I think about possible consequences of different choices for what to do; I evaluate the results of my choices; and, I use my past experience to help me make good choices.

Self-Control: Seven items were adapted from Kendall and Wilcox (1979) to assess self-control ($\alpha = 0.582$). These items were: When I get angry or upset, I take time to get myself under control; I say or do things just because others are doing it*; I wait my turn easily; I calm myself down when I get excited or wound up; I interrupt when other people are talking*; I have trouble waiting in line patiently*¹; and, I think before I speak.

Dependent Variables (Measured at Follow-Up)—Frequency of Aggressive Behaviors was measured by five items developed by Bosworth and Espelage (1995) to gather information about physical and non-physical aggressive behaviors. Participants were asked how many times in the last 30 days they exhibited five aggressive behaviors at school (Encourage others to fight; Spread rumors/gossip; Make someone mad on purpose; Push, shove another; and, Hurt someone on purpose). The total across all items for each observation was computed with a possible range of scores from 0–25. The resulting scores were subdivided into quintiles (the first quintile is comprised of all students with a total score of 0, no aggressive behaviors; the fifth quintile is comprised of students with the highest total scores indicating the most aggressive behaviors, with a range from 10–25). This yielded a categorical variable with scores ranging from “None” to “High” counts of aggressive behaviors.

Weapons Carrying: Participants were asked three separate questions similar to those asked on the Youth Risk Behavior Survey (CDC, 2010). These questions have been used in urban populations nationwide and have been shown to have high stability over time (Division of

¹*refer to items reversed coded to be in the same conceptual direction as the remainder of the scale.

Adolescent and School Health (DASH), CDC, 2003). How many days in the last 30 days, did you: carry a gun, a knife, or a weapon other than a gun or knife? Responses could range from 0–30. Due to the low frequency of weapons carrying, a single dichotomous variable was created with those students who responded 1 or more days on any of the weapons carrying items scored as 1, those who reported no weapons carrying scored as 0.

Data Analysis—Data were analyzed using Stata 11 for Windows (StataCorp, 2009). Multivariate analysis was conducted using polynomial regression to determine the odds of aggression (comparison of five distinct levels) and logistic regression models to determine the odds of weapons carrying (any versus none) as related to each independent variable. No statistically significant differences were found between baseline and follow-up for the outcome variables. As such, the analysis did not control for baseline; however, intervention group status was included as a control variable to account for potential confounding.

Only those independent variables found to be significantly associated at the bivariate level ($p < 0.1$) with each outcome were included in the multivariate model for that outcome. As the overall sample was comprised of primarily African American (96.6%) sixth graders (Mean age = 11.97; SD = 1.10), comparisons were not made based on race or age.

RESULTS

Participants

The final sample consisted of 452 6th graders enrolled in the Steppin' Up study who completed both baseline and follow-up assessments (Figure 1). Students lost to follow-up did not differ significantly from those who remained in the study by gender, school, or recruitment cohort. The sample was predominantly African American, with 12.6% identifying as Hispanic (race and ethnicity were not mutually exclusive). There were almost equal numbers of males and females with a median age of 12 years (CI: 11.91–12.12). 28% lived in single adult households; 72% lived with at least two adults.

Aggressive Behavior

Almost half of the students reported no (21.6%) or few (27.5%, 1–3 behaviors) aggressive behaviors in the last month. 17.4% reported 10–25 aggressive behaviors in the last month. The full breakdown of aggressive behaviors by quintile is shown in Table 1. In the bivariate analysis, peer deviance acceptance, problem friend behaviors, perceptions of parental attitudes about fighting, decision making, and self control were found to be associated with total aggression at the $p = 0.1$ level (Table 2).

In the polynomial logistic regression (Table 3), the influence of problem friends was found to be a significant predictor of aggressive behaviors. Those with medium and high levels of problem friend influence were found to be almost three and five times more likely to manifest aggressive behaviors, respectively. Additionally, adolescent reports of parental disapproval of fighting and increased self-control were seen as protective factors with 61% and 41% reduction in odds of aggressive behaviors, respectively. Neither acceptance of peer deviant behaviors nor decision making skills were found to be significantly associated with aggression, nor were any of the demographic characteristics.

Weapon Carrying

In the last 30 days, 6% of participants carried a gun, 15% a knife, and 11% carried some other weapon; 9% carried more than one type of weapon. In initial bivariate analysis (Table 4), peer deviance acceptance, perceptions of parental attitudes about fighting, decision making, and self control were found to be significant and included in the multivariate model. Included in the model as a control variable, it is interesting to note that gender was found to be significantly associated at this level ($p=0.02$).

In the multivariate logistic regression model for Weapons Carrying (Table 5), self control was found to be a protective factor against weapon carrying behavior. Having self control was associated with a 47% reduction in weapon carrying behavior. Being a girl also was associated with a 43% reduction. None of the other predictors were found to be significantly associated in the model.

DISCUSSION

The primary objectives of this study were to examine aggression and weapons carrying using the TPB framework, specifically to determine if PBC was an influential factor among urban African American early adolescent youth. We found that 50% of youth surveyed reported low or no levels of aggressive behavior. This is similar to the 40 to 50 percent range of students not behaving aggressively reported by other researchers measuring fighting and other aggressive behaviors among early adolescents in urban environments (Cotten et al., 1994; Guerra & Williams, 2006). Studies that examine middle school students find a range of weapon-carrying rates. Both a national survey (Forrest, Zychowski, Stuhldreher & Ryan, 2000) and a survey of urban youth (Malecki & Demaray, 2003) found 10% of students carried weapons. In an urban area of a state in the southern United States, 14% of students were found to carry a knife or club and 3% to carry a gun to school (DuRant, Krawchuk, Kreiter, Sinal & Woods, 1999). In the current study in an urban school district, 18% of youth were classified as weapons carriers, higher than what was found in previous studies. This difference is most likely due to differences in how weapons carrying is defined as unlike previous studies we asked about other weapon use.

Attitudes toward aggressive behaviors were not found to be predictive of aggressive behaviors. This runs contrary to what was expected within the TPB framework, and is inconsistent with previous studies (Roberto, Meyer, Boster & Robertson, 2003). Beyers and colleagues (2001) in their study of urban adolescents found that having attitudes supporting peer deviant behaviors and association with deviant peers were predictors of aggressive behaviors regardless of socioeconomic status (SES). In our study, only association with deviant peers was found to be significant. Perceived norms from both peer and parental relationships were both found to be significant predictors of aggressive behaviors. This is aligned with emerging models in youth development which use a social ecological framework to show that social determinants of health, such as relationships with peers and family, strongly influence youth well-being (Lippman, Moore & McIntosh, 2011). For urban African American early adolescents, their perception of the relationship that they have with their peers and parents appears to be more important than their attitudes toward aggressive behaviors.

Characteristics associated with weapon carrying in prior literature include demographic factors (gender, race and ethnicity), family factors (low social support), school and peer factors (association with deviant peers), and low SES (Resnick, Ireland & Borowsky, 2004). Students were from the same school district in neighborhoods characterized by high rates of poverty and community violence. As such, there was very little variance in demographic factors in this sample. Only gender was found to be a significant predictor of weapon carrying status with girls being less likely to carry a weapon. This is consistent with other research which has found that boys are more likely to carry weapons than girls especially among African Americans and Hispanics in low SES environments (Forrest et al., 2000).

It was predicted that PBC would be associated with aggressive and weapons carrying behaviors. In this study two distinct dimensions of the construct of PBC were examined - 'perceived control,' measured by the Self Control scale, was used to refer to the extent to which the behavior was perceived to be under the adolescent's voluntary control; and, 'perceived difficulty,' measured by the Decision Making scale, which referred to the extent to which the decision to perform the behavior was perceived to be easy or difficult to perform. Self Control and Decision Making were not found to be highly correlated with each other (0.33; $p=0.00$) and only Self Control was found to significantly reduce the odds that youth would manifest both aggressive and weapons carrying behaviors. It is possible that their perception of their own behavioral control is more related to their perception of what they would do, rather than a reflection of their actual level of control, and therefore their behavior. Previous literature among older adolescents has found that PBC measured by decision making and self-control is important in understanding adolescents' intentions to commit aggressive acts (Cox, 2008; Kiriakidis, 2008). As perceived difficulty of Decision Making related to aggressive behaviors was not found to be an important predictor, future research should examine which decision making skills best predict these behaviors in older adolescents and consider how they can be taught in early adolescence.

For youth who live in economically disadvantaged communities, the street milieu increases the chance of embeddedness in deviant peer relationships, personal experiences with violent victimization, easy access to firearms, witnessing community violence, and expectations that future victimization could lead to death; and, impedes the ability of families to manage youth aggressive behaviors (DeCoster et al., 2006). The current findings show that self control and relationships with peers and parents may reduce the risks associated with aggressive behaviors in urban African American early adolescent youth living in these high risk environments.

Implications for Practitioners

The current study speaks to the potential applicability of the TPB for the development of aggression prevention interventions in urban African American early adolescent youth. In particular, it specifically sought to provide some insight into the construct of perceived behavioral control as it manifests in this population of youth. One dimension of this understudied construct, self control, was associated with both aggressive and weapons carrying behaviors. Strategies to improve self control may be a useful addition to interventions designed to reduce aggressive and weapon carrying behaviors. In addition,

including activities with or about peers and parents would enhance these interventions as these were also found to be important predictors of adolescent aggressive behaviors. Therefore, health educators working with urban African American early adolescents should focus not just on the aggressive behaviors but also on developing self control and healthy relationships in order for interventions to be successful.

Limitations

The present study has certain limitations that need to be taken into account when considering the study and its contributions. The study was a secondary data analysis of youth who participated in an intervention trial. However as no statistically significant differences were found between baseline and follow-up for the outcome variables, the analysis did not control for baseline.

The data collected were self-reported and as such, there could be potential bias due to selective memory and social desirability. However, self-report has been found to be better than peer reports in determining the predictors of aggressive behaviors (Little, Jones, Henrich & Hawley, 2003). The use of ACASI for the collection of survey data was expected to minimize the bias due to social desirability in this study.

The sample was comprised of urban African American early adolescent youth who live and attend middle school in a city characterized by low SES and increased levels of community violence. These characteristics put them at high risk for perpetrating or being a victim of violent behavior as they become older adolescents (Dahlberg, 1998). As such, this sample may not be generalizable to other populations. However, understanding aggression and weapons carrying in this at risk population is of particular importance to developing intervention strategies tailored to youth living in this particular milieu.

Although the current study utilizes scales and indices which have been normed and validated with similar populations, they were not specifically designed for the TPB. However, they were designed to measure attitudes, norms, and control beliefs and accurately represent constructs of the model. In addition, the construct of intention to perform a behavior was not included in this adapted model. In extending this research, a reliable indicator of intentions should be considered for inclusion.

CONCLUSION

This study is unique in that it describes characteristics of urban African American early adolescent youth who live in an ecological niche characterized by low SES and high crime context which is a predictor for being at high risk for perpetrating or being a victim of violent behavior as they become older adolescents (Dahlberg, 1998). In addition to contributing to the literature that currently exists about early adolescent African American youth and aggressive and weapons carrying behavior, this research provided an innovative application of the TPB. In particular, it specifically sought to provide insight into the construct of PBC as it manifests in this population of youth. One dimension of this understudied construct, self control, was associated with both aggressive and weapons carrying behaviors. Future research should further examine this relationship as well as

whether additional dimensions of this construct should be studied. In addition, this study demonstrated that the TPB may provide a useful framework for understanding the risk and protective factors for aggressive and weapons carrying behaviors which may have implications for the development of violence prevention programs.

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Study Sample Flow Chart
Incoming 6th Graders

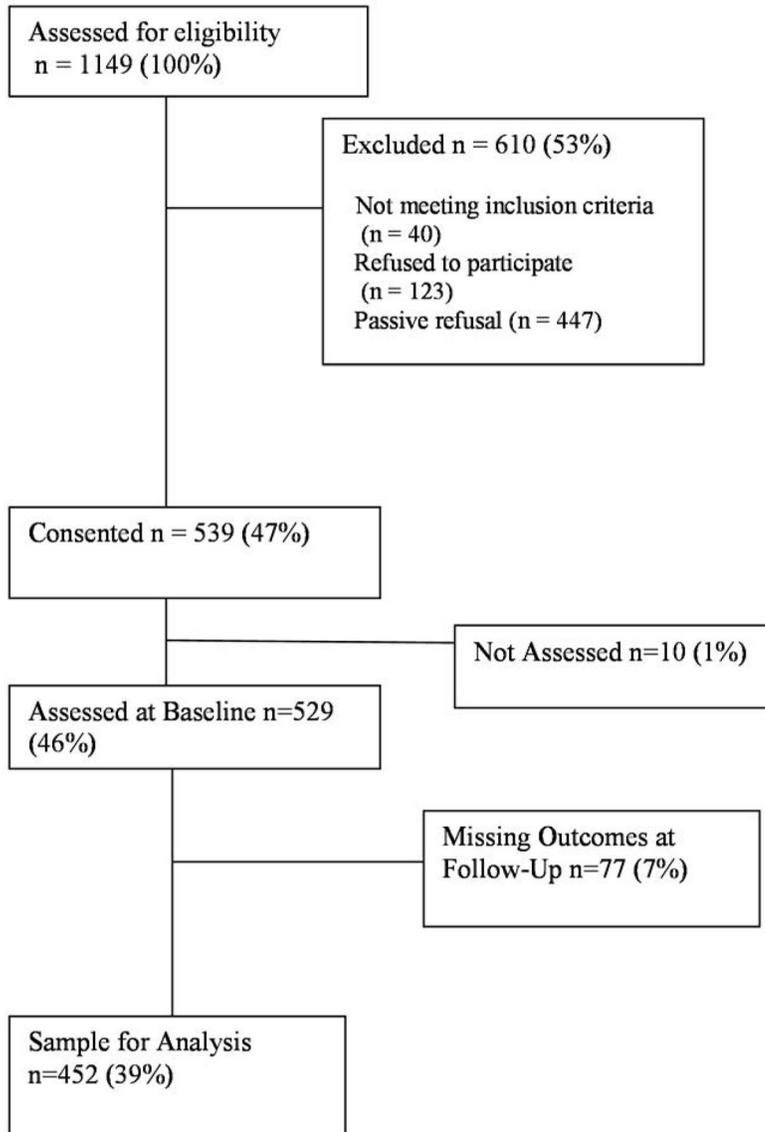


Figure 1.
Study sample flow chart

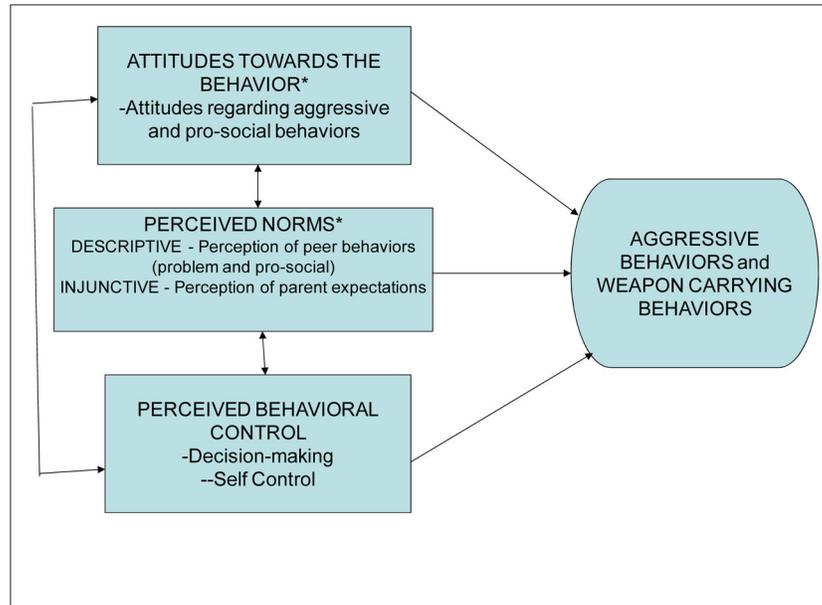


Figure 2. Conceptual Framework (Adapted from Montano & Kasprzyk, 2008)

Table 1

Variable frequency distribution table

Variable Name:		Frequency	%
Dependent Variables			
Aggressive Behaviors in last 30 days (n=436) 5 items	No Aggressive Behaviors	94	21.6
	Low (1–3 Behaviors)	120	27.5
	4–5 Behaviors	71	16.3
	6–9 Behaviors	75	17.2
	High (10–25 Behaviors)	76	17.4
Weapons Carrying in past month (n=452) 3 items	Never Carry	369	81.6
	Carried one or more	83	18.4
Independent Variables			
<i>Attitudes</i>			
Peer Deviance Acceptance (n=431) 8 items	Disagree with All Deviant Behaviors	271	62.9
	Agree with Any Deviant Behaviors	160	37.1
<i>Perceived Norms</i>			
Friend Behavior Influence - Problem Behaviors (n=444) 5 items	Low	150	33.8
	Medium	162	36.5
	High	132	29.7
Friend Behavior Influence - Prosocial Behaviors (n=445) 5 items	Low	155	34.8
	Medium	162	36.4
	High	128	28.8
Perception of Parental Norms About Fighting (n=421) 12 items	Perceived Parents to Endorse Aggression (Disagree with All Items)	38	9.0
	Perceived Parents to be Neutral about Aggression	175	41.6
	Perceived Parents to be Against Aggression (Agree with Any)	208	49.4
<i>PBC</i>			
Decision Making (n=444) 6 items	Risky	135	30.4
	Protective	309	69.6
Self-Control (n=443) 7 items	Risky	159	35.9
	Protective	284	64.1

Table 2

Distribution of aggressive behaviors at follow-up by baseline characteristics

Baseline Characteristics	Aggressive Behavior Categories (%)				χ^2	
	None	Low	Medium-Low	Medium-High		High
Demographics						
Gender						
Male (n=215)	18.6	27.4	17.2	18.6	18.1	2.55
Female (n=221)	24.4	27.6	15.4	15.8	16.7	
Cohort						
A (n=203)	19.2	27.1	16.8	21.7	15.3	6.48
B (n=233)	23.6	27.9	15.9	13.3	19.3	
School						
A (n=143)	18.2	21.0	15.4	24.5	21.0	17.30*
B (n=222)	25.7	28.8	15.8	14.4	15.3	
C (n=71)	15.5	36.6	19.7	11.3	16.9	
Family Structure						
Two Parents/Adults (n=317)	23.0	28.1	13.3	16.4	19.2	10.48*
Single Parent/Adult/Other (n=119)	17.7	26.1	24.4	19.3	12.6	
Treatment Status						
Intervention (n=222)	21.6	32.0	16.2	17.1	13.1	8.22
Control (n=214)	21.5	22.9	16.4	17.3	21.9	
Attitudes						
Peer Deviance Acceptance						
Protective (n=268)	26.5	29.9	14.9	16.8	11.9	22.45***
Risky (n=154)	13.6	22.7	18.8	18.2	26.6	
Perceived Norms						

Baseline Characteristics	Aggressive Behavior Categories (%)				χ^2
	None	Low	Medium-Low	Medium-High	
Friend Behavior Influence - Problem Behavior					
Low (n=148)	39.9	35.1	8.1	9.5	7.4
Medium (n=158)	11.4	30.4	26.6	20.9	10.8
High (n=129)	13.2	15.5	13.2	21.7	36.4
Friend Behavior Influence - Prosocial Behavior					
Low (n=149)	18.8	28.2	15.4	16.8	20.8
Medium (n=160)	21.3	23.1	16.3	20.0	19.4
High (n=127)	25.2	32.3	17.3	14.2	11.0
Perception of Parental Attitudes About Fighting					
Endorsement of Fighting (n=35)	5.7	25.7	25.7	14.3	28.6
Neutral (n=173)	14.5	20.2	15.6	23.1	26.6
Disapprove of Fighting (n=205)	30.7	32.7	14.6	13.7	8.3
PBC					
Decision Making					
Risky (n=129)	14.0	23.3	12.4	23.3	27.1
Protective (n=306)	24.8	29.4	18.0	14.4	13.4
Self Control					
Risky (n=157)	13.4	19.8	19.8	19.1	28.0
Protective (n=278)	26.3	32.0	14.4	15.8	11.5

Bold χ^2 means included in logistic regression model.

* p < .05,

** p < .01

Table 3

Odds of aggressive behavior by TPB predictors¹

IBM Predictors	Odds Ratio	95% Confidence Interval
Attitudes		
<i>Peer Deviance Acceptance</i>		
Protective	1	
Risky	1.41	.95 – 2.07
Perceived Norms		
<i>Friend Behavior Influence - Problem Behaviors</i>		
Low	1	
Medium	2.61	1.68 – 4.07**
High	5.05	3.03 – 8.39**
<i>Perception of Parental Attitudes About Fighting</i>		
Endorsement of Fighting	1	
Neutral	0.81	0.42 – 1.54
Disapprove of Fighting	0.39	0.21 – 0.76**
PBC		
<i>Decision Making</i>		
Risky	1	
Protective	0.82	0.53 – 1.25
<i>Self Control</i>		
Risky	1	
Protective	0.59	0.39 – 0.88**

¹ Controlled for gender, enrollment cohort, intervention group status, school, and family structure.

* p < .05,

** p < .01

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Table 4

Weapon carrying in past month at follow-up by baseline characteristics

Baseline Characteristics	Carriers (%)	χ^2
Demographics		
Gender		
Male (n=222)	22.5	5.24*
Female (n=226)	14.2	
Cohort		
A (n=216)	19.0	0.11
B (n=236)	17.8	
School		
A (n=149)	21.5	1.44
B (n=228)	17.5	
C (n=71)	15.5	
Family Structure		
Two Parents/Adults (n=325)	17.5	0.52
Single Parent/Adult/Other (n=127)	20.5	
Treatment Status		
Intervention (n=230)	18.3	0.016
Control (n=219)	18.7	
Attitudes		
Peer Deviance Acceptance		
Protective (n=271)	14.0	5.79*
Risky (n=160)	23.1	
Perceived Norms		
Friend Behavior Influence - Problem Behavior		
Low (n=150)	13.3	3.76
Medium (n=162)	19.1	
High (n=132)	22.0	
Friend Behavior Influence - Prosocial Behavior		
Low (n=155)	18.7	2.97
Medium (n=162)	21.0	
High (n=128)	13.3	
Perception of Parental Attitudes About Fighting		
Endorsement of Fighting (n=38)	15.8	7.24*
Neutral (n=175)	22.9	

Baseline Characteristics	Carriers (%)	χ^2
Disapprove of Fighting (n=208)	12.5	
<u>PBC</u>		
Decision Making		
Risky (n=135)	28.9	13.99**
Protective (n=309)	13.9	
Self Control		
Risky (n=159)	26.4	10.27**
Protective (n=284)	14.1	

* p < .05,

** p < .01

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Table 5

Odds of Weapon Carrying by IBM Predictors¹

IBM Predictors	Odds Ratio	95% Confidence Interval
<u>Attitudes</u>		
<i>Peer Deviance Acceptance</i>		
Disagree with all deviant behaviors	1	
Agree with any deviant behaviors	1.31	0.75 – 2.31
<u>Perceived Norms</u>		
<i>Perception of Parental Attitudes About Fighting</i>		
Endorsement of Fighting	1	
Neutral	1.31	0.49 – 3.49
Disapprove of Fighting	1.01	0.37 – 2.77
<u>PBC</u>		
<i>Decision Making</i>		
Risky	1	
Protective	0.56	0.31 – 1.01
<i>Self Control</i>		
Risky	1	
Protective	0.53*	0.30 – 0.94

¹ Controlled for gender, enrollment cohort, intervention group status, school, and family structure.

* p < .05

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