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## Identifying Associated Risk with Exposure to Weapon Carrying Among Emerging Adults Living in Disadvantaged Urban Areas in Birmingham

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IDENTIFYING ASSOCIATED RISK WITH EXPOSURE TO WEAPON CARRYING  
AMONG EMERGING ADULTS LIVING IN DISADVANTAGED URBAN AREAS IN  
BIRMINGHAM

by

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A DISSERTATION

Submitted to the graduate faculty of The University of Alabama at Birmingham,  
in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy

BIRMINGHAM, ALABAMA

2019

# IDENTIFYING ASSOCIATED RISK WITH EXPOSURE TO WEAPON CARRYING AMONG EMERGING ADULTS LIVING IN DISADVANTAGED URBAN AREAS IN BIRMINGHAM

TOLULOPE ADUROJA

HEALTH EDUCATION/HEALTH PROMOTION

## ABSTRACT

Weapon carrying is a public health concern due to its association with serious injury, disability or death, and adverse health-related outcomes. It is associated with both intrinsic and extrinsic factors. Violence in youth and young adults is the 2nd leading cause of death (homicide) in Alabama. Health behavior theories posit that health-relevant attitudes, beliefs, and behavioral skills drive subsequent actions people take to protect themselves from health threats. It is important to identify and understand the unique modifiable risks for violence in youth and young adults.

The study utilized secondary data analysis of data collected from a larger cross-sectional survey to understand socio-demographic risk factors associated with weapon carrying among emerging adults. The study sought to investigate the predictors and risk factors associated with Weapon Carrying among Emerging Adults Living in Disadvantaged Urban Areas in Birmingham. Males were found to be more likely to carry weapons than females. Analyses further showed that substance use, having children; age and absence of education were all predicting factors.

Study further assessed for the predictive effect of Zimbardo Time Perspective on weapon carrying. This time perspective according to Zimbardo tends to play a significant role in decision-making, especially when it comes to the avoidance of risk-taking behaviors or engagement in prosocial behaviors. Weapon carrying did not show significance with any of the time perspectives measured in this study except for the Transcendental-Future Time Perspective. It was found to be more significant when the outcome is further limited to gun carrying. Emerging adults that grew up in this disadvantaged urban neighborhood will be expected to face significant challenges that can impact their mode of thinking and psychological mindedness.

The study examined the relative association of weapon carrying and social network among emerging adults in disadvantaged communities. After adjusting for the socio-demographic characteristics, we found few socio-demographic parameters to be predictive of weapon carrying in the study sample; participants whose family encouraged use of violence to solve problems had greater odds of weapon carrying. Above family encouragement and discouragement by peers to use violence to solve problems is associated with less odds of carrying guns.

## DEDICATION

This dissertation is dedicated to my most cherished wife and my best friend, Ayodele Olanireti, my pillar of unyielding faith, courage, strength, hope, love and my kids Naomi Oladele and Hannah Olamide for their unconditional love.

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## LIST OF ABBREVIATIONS

AOR	Adjusted Odd Ratio
CDC	Center for Disease Control
CPH	Congregation for Public Health
CI	Confidence Interval
IPV	Intimate Partner Violence
IRB	Institutional Review Board
MSA	Metropolitan Statistical Area
OR	Odds Ratio
RDS	Respondent Driven Sampling
ROC	Receiver Operating Characteristics
SD	Standard Deviation
TfTPI	Transcendental-future Time Perspective Inventory
UAB	University of Alabama at Birmingham
YRBS	Youth Risk Behavior Survey
YRBSS	Youth Risk Behavior Surveillance System
ZTPI	Zimbardo Time Perspective Inventory

## INTRODUCTION

### Background

Weapon carrying can be described as an aggressive act or an act of self-defense in response to victimization that involves the carrying of a gun, knife or club (Simon et al, 1998, Kingery et al, 1999). Weapon carrying among youth and young adults is an ongoing matter of concern. Violent offenses committed with a weapon are the most dangerous offenses, often leading to serious injury, disability or death. The 2013 Youth Risk Behavior Survey (YRBS) found that, nationwide, 17.9% of youth had carried a weapon (e.g., gun, knife, or club), and 5.5% had carried a gun (Forster et al, 2015). According to the Center for Disease Control and Prevention, 3.8% of 9–12th graders carried a weapon to school in the past 30 days and 6% of high school students were threatened or injured with a weapon on school property in the past 12 months (YRBS, 2017). Those classified as weapon carriers who experienced victimization had a higher prevalence of carrying a gun or any weapon at school when compared to those who were classified as weapon carriers who did not experience victimization (Dijkstra et al, 2011). In addition, weapon carriers who hadn't experienced victimization were more likely to engage in substance use and other risky behaviors than weapon carriers with victimization. Knowing that adolescents and young adults are particularly vulnerable to violent behavior and that persons carrying a weapon are more often implicated in physical fights, it is obvious that weapon carrying is a risk behavior that deserves attention.

Risk factors for weapon carrying include being male, a history of substance use, living in unsafe surroundings, witnessing violence, having been a victim of violence, having high availability of weapons, a history of delinquency other than carrying a weapon and poor academic performance (Thurnherr et al, 2009). Assessing the prevalence of weapon carrying and understanding the risk factors associated with weapon carrying is important for at least three distinct reasons (Barlas et al, 2006). First, weapon carrying in most developed countries is a criminal offense and is therefore a form of delinquent behavior. Second, carrying a weapon increases the likelihood of weapon-related conflict and is linked to the use of physical violence. Finally, adolescent weapon carrying can be an indicator of other problem behaviors such as poor academic achievement and commitment (Begue & Duke, 2016).

Weapon carrying is associated with intrinsic or internalizing factors (Stayton et al, 2011). Intrinsic factors are internal qualities that affect decision-making. The category of intrinsic factors includes impulsivity, intellectual functioning, time perspectives, and sense of self and of the future. Individual level attributes such as gender, age and mental and psychological status of the person involved have also been reported to be associated with weapon bearing. Youth who are impulsive or who do not have a sense of the future are more likely to engage in risk behaviors, such as, weapon carrying (Boyd, 1999, Bandura 1977). Likewise, extrinsic or externalizing factors are also associated weapon carrying (Stayton et al, 2011). Extrinsic factors are experiences that youth and young adults have with the people at home, in their schools, and in their communities. Connectedness, exposures to violence in one's community, safety and victimization are some of the extrinsic factors (Kodjo et al, 2003). Other extrinsic factors include neighborhood and

community factors, such as poverty and crime, family characteristics, school organization and occupation. Protective factors associated with weapon carrying in youth include positive family communication and parental monitoring. For Hispanic and white youth, having a relationship with the mother was prospectively associated with a lower likelihood of weapon carrying (Bailey, 1997).

### *Youth and Emerging Adults*

Youth and emerging adults are a special population not studied often by researchers nor reached by health promotion campaigns. For the purpose of this study, the age range used is from 15 to 25 years of age. Violence in youth and emerging adults is defined as the intentional use of threatened or actual physical force or power against another person or against a group/community that results in or has high likelihood of resulting in injury, death, physical harm or deprivation (Dahlberg & Krug, 2002). Violence can be expressed through bullying; slapping; hitting; robbery; assault (with or without weapon); emotional harm; criminal/delinquent behaviors; rape, or murder. The violence-involved young person can be a victim, an offender, or a witness to the violence.

According to the National Center for Injury Prevention and Control Division of Violence Prevention, violence in youth and emerging adults is now the third leading cause of death for young people between 10 and 24 year olds (YRBS, 2017). Youth violence refers to intentional harmful or threatening behaviors that can start early and continue into young adulthood. Youth violence has been reported to start early; hence physical aggression can be seen among some toddlers. These children can remain aggressive and become more violent especially when they demonstrate significant impulsivity, poor emotional control and lack of social and problem solving skills. There is a continuum of

escalating aggressive behavior when aggressive and violent behaviors are not appropriately and adequately addressed at an early stage of growth. In terms of the public health impact of youth violence in the United States, there was an average of 12 young people murdered daily in 2017. Also in the same year, there was an increase in utilization of the emergency rooms with almost 1,400 individuals treated in emergency departments for nonfatal assault-related injuries. The national Youth Risk Behavior Survey (YRBS) showed that 24% of high school students reported being involved in physical fight in the 12 months before survey and 19% of high school students were bullied on school property in 2017 (YRBS, 2017).

A study conducted by CDC showed that violence in youth and emerging adults affects individuals, communities, health care costs (estimated \$18.2 billion spent annually for combine medical and lost productivity), property values, and social services. Perpetrators are usually in the same age group as victims. Weapons are involved in the most deadly forms of school violence, and weapon carrying is considered a highly salient, contemporary adolescent and emerging adult health issue.

Weapons can be used to perpetrate other forms of violence that are also common in youth and emerging adults. These include teen dating violence, sexual violence, and intimate partner violence.

#### Specific Aims and Hypotheses

The primary study was conducted to understand and further guide the development of a peer-driven intervention aimed at promoting healthy behavior patterns in individuals and their social networks. A secondary analysis of data was done to understand the predictive factors for weapon carrying and gun carrying in Birmingham, Alabama.



### Specific Aims

- To identify socio-demographic risk and protective factors associated with weapon carrying among emerging adult men and women.
- To examine how weapon carrying, and gun carrying are associated with the Zimbardo Time Perspective Inventory and coping self-efficacy among African American emerging adults in low-income urban neighborhoods.
- To examine the relationship between social network communication characteristics and weapon carrying and to examine the predictive value of these factors to weapon carrying.

### Hypothesis (i)

- To identify socio-demographic risk and protective factors associated with weapon carrying among emerging adult men and women. (Specific Aim 1)
- Hypothesis Ho: Weapon carriers and non-carriers do not differ in selected predictors and risk factors associated with weapon involvement among emerging adults living in disadvantaged urban areas.
- Hypothesis Ha: Weapon carrying and non-weapon carrying emerging adults living in disadvantaged urban areas will differ in predictors and risk factors (age, sex, education) associated with weapon involvement.

### Hypothesis (ii)

- To examine how weapon carrying, and gun carrying are associated with the Zimbardo Time Perspective Inventory and coping self-efficacy among African American emerging adults in low-income urban neighborhoods. (Specific Aim 2)

- Hypothesis Ho: Weapon carriers and non-carriers do not differ in Zimbardo Time Perspectives and level of coping self-efficacy.
- Hypothesis Ha: Weapon carriers and non-carriers differ in Zimbardo Time Perspectives and level of coping self-efficacy.

#### Hypothesis (iii)

- To examine the relationship between social network communication characteristics and weapon carrying and to examine the predictive value of these factors to weapon carrying. (Specific Aim 3)
- Hypothesis Ho: Weapon carriers will not differ from non-carriers in Social Network communication factors.
- Hypothesis Ha: Weapon carriers will differ from non-carriers in Social Network communication factors.

#### Limitations

Self-report and completion of questionnaires was the methods used to obtain the data used for this study. The possibility of social desirability bias cannot be ruled-out in this study. Even though the initial primary research objective was to obtain data from all ethnicities, at the end, sample studied were all African American. Therefore, the findings may not be generalizable to other populations or communities. Also because this study used a cross-sectional format, associations and directionality between the predictor variables and outcome/dependent variable cannot be determined or established.

## Significance of the study

It is of paramount importance to identify and understand the unique individual modifiable risks for youth violence such as impulsivity, hyperactivity, inattention, drug use, alcohol or tobacco use, history of treatment for emotional problems, feeling of invisibility, association with delinquent peers and gang involvement. Risk factors at the community level include economic deprivation; community disorganization; the availability of drugs, alcohol, and firearms; and high neighborhood crime rate. A public health approach provides a useful framework for addressing the relevant issues to be considered in preventing violence in youth and young adults. The major steps involved are problem definition, risk and protective factors identification (Oetzel et al, 2006 & Massetti et al, 2011). According to the results from these studies, it can be concluded that minority youth are at risk of violence (including homicides) than their Hispanic or White counterparts.

The state of Alabama and city of Birmingham are no exception to this critical problem. When data is specific to the local population, the incidence and prevalence appear to be important. Violence in this age group disproportionately involves racial and ethnic minorities. The CDC has reported up to as many as 57.9 deaths per 100,000 population by quartiles for persons ages 10-24 years in Alabama (CDC, 2003). Violence in youth and young adults is the 2<sup>nd</sup> leading cause of death (homicide) in Alabama just as it is nationally. Non-Hispanic Black and Hispanic males have disproportional rates higher than the national rate (49/100,000 and 33/100,000 respectively) in Alabama (CDC, 2003).

## LITERATURE REVIEW

### *Overview: Theoretical Basis of the Study*

Health behavior theories posit that health-relevant attitudes, beliefs, and behavioral skills drive subsequent actions people take to protect themselves from health threats. Other psychological theories (e.g., self-perception or cognitive dissonance theories) suggest that the opposite could be true - that health-relevant attitudes and beliefs might change as a function of previous risk or precautionary behavior (Huebner et al, 2011; Voelker, 2012). There are also modifying factors that can affect behavioral compliance such as, cue to action, media, health professionals, personal relationships, incentives, and self-efficacy to perform the recommended action. Self-efficacy appears to play a significant role in the promotion of healthy behavior and life style modification. This theoretical construct will now be elaborated for clarity.

### *Self-Efficacy Theory*

Self-efficacy theory has generated research in areas as diverse as medicine, psychology, organized sports, and business, social and political circles. In psychology, it has been the focus of studies on clinical problems such as phobias, depression, social skills, assertiveness, smoking behavior, and moral development. Self-efficacy has been studied to understand ways that students can improve their academic achievement, goal setting, social comparisons, memory, problem solving, and career development. Researchers have established that self-efficacy beliefs and behavior changes and outcomes are highly correlated and that self-efficacy is an excellent predictor of behavior.

Self-Efficacy exists as an explanatory construct in several other theories (Health Belief Model, Integrated Behavioral Model, Social Cognitive Theory, Transtheoretical Model, Transactional Model of Stress and Coping and Social Marketing). Albert Bandura's concept of self-efficacy developed within his studies of human social cognition theories. Bandura's early research focused on the 'extraordinary symbolizing capacity of humans'. He theorizes that people draw on these symbolic capabilities to understand their environments by purposeful actions, cognitively solve problems, develop reflective thoughts and effectively communicate with others. Bandura argues that when people symbolize their experiences, they give structure, meaning, and continuity to their lives (Bandura, 1997).

#### *Self-Efficacy Theory Constructs*

This theory introduces the idea that one's perception of their efficacy to perform is influenced by four factors or constructs: mastery experience, vicarious experience, verbal persuasion, and somatic and emotional state (Hayden, 2009).

#### *Mastery Experience*

This is a construct that manifests when we attempt to do something, and we become successful because we have mastered something. According to Bandura, experiencing mastery is the most effective way to boost self-efficacy because people are more likely to believe they can do something new if it is similar to something they have already done well. To develop a strong sense of efficacy for a particular behavior, difficult tasks need to be attempted and obstacles worked through. An elevated level of self-efficacy due to mastery can lead to an increase in the performance accomplishment.

The construct of mastery was not specifically measured in the data set used in this secondary analysis. In the data set used for this study, only a global score was available to compare the individuals who reported carrying weapons and those who did not. Research has demonstrated that competence in dealing effectively with a variety of stressful situations, such as exposure to and handling of weapons in the community can play a part in either extinguishing negative behavior or perpetrating negative behavior (Mehmet et al, 2013). The coping self-efficacy scale used in this study measures an individual's confidence in performing coping behaviors when faced with life challenges and threats (Chesney et al, 2006). People with a higher score usually invest more effort in a given task (e.g., avoidance of weapon or gun) and tend to maintain the effort longer.

#### *Vicarious Experience*

Vicarious experience refers to the ability to learn through the observation of the successes and failures of others who are similar to one's self. Self-efficacy is increased when an individual similar to the observer is watched as he accomplishes something that the observer intends to attempt. Conversely, observing someone similar fail a task that one also wants to attempt threatens self-efficacy. The more one associates with the person being watched, the greater the influence on the belief that one's self can also accomplish the behavior being observed. Not only do workshops and training sessions increase mastery, they can also provide vicarious experiences as well. Watching others during role-playing can provide observational experiences that enhance self-efficacy, especially if the person performing or learning the behavior is similar to the observer. Theoretically, a person seeing others in their social network carrying weapon or gun with desirable outcomes might easily be persuaded to also carry a weapon. In the data set used, there was

no measure for this particular construct. However, the data set does include questions regarding the participant's perceptions of the level of influence from friends and families on weapon carrying, which could suggest vicarious experience and/or verbal persuasion.

### *Verbal Persuasion*

This construct is also known as social persuasion. People are more likely to perform a task when they are persuaded verbally that they can achieve or master the task. Having others verbally support attainment or mastery of a task goes a long way in supporting persons' belief in themselves. Coaches are a good example of someone using verbal persuasion to increase someone's self-efficacy. They can make their players believe in themselves when contesting against another team. On the other hand, when people are told they do not have the skills or ability (especially youths) to do something, they tend to give up quickly. As noted above, measures of perceived influence of family and friends and others in the social network (e.g. preachers); can suggest whether verbal persuasion is influencing weapon carrying behavior.

### *Somatic and Emotional States*

The physical and emotional states that occur when someone contemplates performing a particular task provide clues to the person as to the likelihood of success or failure. Stress, anxiety, worry and fear all negatively affect one's self-efficacy to behave in a certain way and can lead to a self-fulfilling prophecy of failure or inability to perform the feared tasks. According to Bandura, stressful situations create emotional arousal, which in turn affect a person's perceived self-efficacy in coping with the situation. This construct explains why people fear going to see a dentist. The mere thought of going to the dentist is associated with intense pain and anxiety (Bandura, 1977). Because of this

stressful situation, people cannot even bring themselves to make appointments or keep one for routine, preventive dental care. If the emotional state improves (stress is reduced), a change in self-efficacy can be expected. In terms of weapon carrying, emotional states such as anxiety, might be associated with reluctance to carry weapons. Unfortunately, the data did not have a specific measure of this construct, although the Coping Self Efficacy (CSE) scale does contain a number of items related to handling the emotions that come with stress (Chesney, 2006).

The Coping Self-efficacy Scale to determine the subjects' perceptions, attitude, knowledge and behavioral patterns can be used with reference to the weapon carrying and engaging in other risky behavior or avoidance of similar risky behaviors. The instrument is further described in the Instrumentation section. CSE scale is also a useful tool for measuring an individual's perceived ability to cope effectively with unpredictable life difficulties. Efficacy beliefs will be expected to predict adherence to habits that encourage prosocial behavior and prevent the carrying of weapon and gun for destructive purposes. (Full details of these measurements and scoring instructions are in the Appendix.)

#### *Zimbardo Time Perspective Inventory (ZTPI)*

Time perspective has been hypothesized by Zimbardo and Boyd (1999) as a robust influence on human behavior. It identifies the distinctive separation of psychological time into past, present and future temporal frames. Time perspective was further conceived by Zimbardo as a relatively stable individual process. Time perspective can be defined as the subconscious subjective manner in which each of us attempts to relate to time that gives meaning and coherence to events in our lives. It was devised to measure per-



sonal variations in time perspective and specific time perspective biases (Strathman, 2008).

The ZTPI provides a valid and reliable instrument for demonstrating the influence of attitudes toward time on behavior. Exploratory and confirmatory factor analyses have led to the discovery of five distinct time perspective domains or factors. These factors are past-negative, present-hedonistic, future, past-positive, and present-fatalistic. They each capture a coherent time perspective dimension (Zimbardo & Boyd, 1999). Looking at the time perspective in the age group being studied, their willingness to prepare for the future depends in part, on their confidence in living long enough to benefit from return on their investment. If they perceive life to be fragile, then confusing thoughts come in to their minds. Some of these are, why study hard, why create stable relationships, or delay the pleasures of potentially risky behaviors such as sex, driving or weapon carrying? Despite common wisdom, studies have found that adolescents are, if anything, less likely than adults to see themselves as relatively invulnerable, compared to their peers (Fischhoff et al, 2010). The current study examined the relationship between these domains and weapon carrying to answer questions about whether there are certain time perspectives that predict risky behaviors in youth and young adults. The actual items for the scales described below can be found in the Appendix.

*The Past-Negative Scale & Time Perspective (10 items)*

This scale contains items that reflect a generally negative, pessimistic and aversive view of an individual's past. Increased scores on this scale can signify maladaptive behavior and unstable health. Negative rumination about past events has been found to be associated with depression, anxiety, and emotional instability (Lyubomirsky & Nolen-

Hoeksema, 1995; Holman & Zimbardo, 2003). Hence, individuals with increased scores on this scale tend to struggle with negative emotions and find it difficult mobilizing apt coping strategies during stressful moments. Strathman (2008) reported that from a psychological perspective, what individuals believe happened in the past is as important to present thoughts, feelings and behavior as what actually did happen. This scale can be seen as related to self-efficacy; stress, anxiety, worry, and fear produce emotional arousal that affects an individual's perceived self-efficacy in coping with the situation (Bandura, 1977).

*The Present-Hedonistic Scale & Time Perspective (15 items)*

This scale contains items that reflect a hedonistic, risk-taking, nonchalant attitude toward time and life. Youth and young adults who have increased scores are more impulsive and pleasure seeking. They do not focus on the future and do not know how to delay gratification. Research has showed that individuals who are high in present hedonism behave in ways similar to individuals low in future time perspective. Individuals with this time perspective are less likely to practice safe sex, more likely to consume alcohol and more likely to take risks while driving (Alvos et al, 1993; Hutton et al, 1999; Zimbardo et al, 1997). Individuals who score high on the present-hedonistic scale talk more about their problems while avoiding doing anything to cope with them. Little can be found regarding research on the relationship between this perspective and weapon carrying.

*The Future Scale & Time Perspective (13 items)*

This scale contains items that basically reflect a general future orientation. It suggests that present behavior is dominated by a striving for future goals and rewards. Because of the focus on the future, individuals avoid risks when possible, make contingency

plans for unavoidable risks and delay gratification. Youth and young adults are at the stage of life when the society calls on them to start making apt decision about their future. They typically talk about topics that revolve around education, occupation, and family (Gillies, 1989). The majorities of them is relatively optimistic about their future and believe that they have personal control over it (Brown & Larson, 2002). Some measures of future orientation in this age group have been found to be gender specific. Males have been found to be more interested in material aspects of life while the females are more focused on interpersonal relationships, establishing family and having children (Malmberg, 1996; Nurmi, 1991).

*The Past-Positive Scale & Time Perspective (9 items)*

This scale contains items that reflect a warm, sentimental, and nostalgic attitude toward the past. It captures an individual's belief about the past without challenging the accuracy of these beliefs. Zimbardo (2003) reported that this time perspective is related to happiness, self-esteem, lower anxiety and friendliness. Individuals experiencing this phase tend to cope with stressful situations effectively and they tend to enjoy more social support, and less social conflict. There is resiliency demonstrated effectively by individuals showing past-positive time perspective. These individuals would be expected to be less likely to carry a weapon.

*The Present-Fatalistic Scale & Time Perspective (9 items)*

Items contained in this scale represent a fatalistic, helpless, hopeless and cynical attitude toward the future and life. Individuals do not believe in contingent relationships between their present actions and future consequences. Individuals with high scores in present-fatalism may carry out very risky behaviors (unprotected sex, violence, weapon

carrying and drug use) because of they believe there is no difference in their future consequences despite their risky behaviors (Holman & Zimbardo, 2003; Hutton et al, 1999). They also do not like to talk about their life stressors because of their belief that they are un-modifiable (D'alessio et al, 2003).

#### *Transcendental-Future Time Perspective (10 items)*

In addition to the five subsets of the ZTPI, an additional time perspective was used for this study. The Transcendental-Future scale is composed of beliefs about after-life. It is believed that death is just the beginning of another life. Beliefs held in this time perspective may influence an individual's present behavior. It is used to explain extreme behaviors, such as suicide bombings (Boyd & Zimbardo, 1996; Strathman, 2008). In theory, a strong transcendental orientation would be expected to be counter to weapon carrying.

#### *Significance of the Study*

Weapon and gun-related violence is a public health concern. Research suggests that many adolescents involved in violence as victims become offenders themselves as they are exposed to increased levels of indirect victimization, direct victimization, and peer victimization. While there is a connection between witnessing and perpetrating violence, the actual attack with guns, and peer violence, all of which influence delinquent behavior, less is known about whether this relationship differs by age and gender (McGee et al, 2017).

Exposure to violence has detrimental effects on urban youth such as stress, psychological dysfunction and negative behavioral outcomes. Additionally, Kling, Ludwig,

and Katz (2005), in a study of neighborhood context among a group of youth, found when controlling for at-risk neighborhood characteristics, offending for overall crimes decreased as the neighborhood risk factor attenuated. Recent studies have demonstrated that 25% of inner-city youth across America are exposed to violence in their lifetime while a substantial proportion has experienced violence in their neighborhoods or communities (Zimmerman & Pogarsky, 2011).

Several factors are reported to be associated with carrying of weapons. Previous literature regarding weapon carrying has focused on the relationship between adolescent risk behaviors and violence (Simon et al, 1999). The majority of these studies have not directly assessed the combined effects of demographic, intrinsic, and extrinsic factors on weapon-carrying behaviors. Furthermore, studies are limited of these associations with an emerging urban adult population residing in Bible belt state. This study will be able to bridge gaps in the previous knowledge about the correlation between weapon carrying and demographics, intrinsic and extrinsic factors seen in emerging adults.

## METHODS

### Study Population, Design, Recruitment and Data Collection

The original research (Community Influences Transition of Youth – CITY Health Core Research Project with CDC parent grant 1 U48 DP001915-01) participants were recruited for the CITY Health project to investigate resilience, risk, and protective behavioral health factors in emerging adults in disadvantaged neighborhoods in the Birmingham-Hoover, AL metropolitan area. Recruitment was conducted using Respondent Driven Sampling (Heckathorn, 2002, 1997), since the target population was in a transitional

phase marked by instability and change (Vlahov et al, 2004). Our study was a secondary analysis of data from the above study. A total of 344 individuals were enrolled into the study. There were no gender differences in age, formal education, marital status and religious affiliation and place of abode in the last 6 months.

Adolescent children aged 15 to 18 years were included in the main study because they represented the age of onset of many unhealthy behavioral patterns. Additional measures to protect these participants include ensuring that the study assessments are age- and developmentally appropriate. All measures have previously been validated in similar age populations, including in a longitudinal study of health outcomes using a multi-ethnic/multi-site samples of adolescents. The investigative team had much prior research experience working with adolescent children of this age, and the informed consent document and the nature of the study contents were thoroughly explained to them prior to their enrollment and data collection (primary data).

This study investigated the health risk behavior of weapon carrying among these African Americans ages 15 to 25. The years spanning adolescence to young adulthood comprise a distinctive developmental period, often termed emerging adulthood; it also is the developmental stage when substance use and other risk behaviors are higher (Arnett, 2000, 2005, 2007).

Children under 15 years of age were excluded since the focus was emerging adults. Also because the study looked into the relationship between individuals and their social networks, first-degree relatives of participants were excluded. Participants that were not competent to give informed consent (able to understand and read English; showed no obvious psychosis, dementia or inability to hear) were also excluded from the

primary study. The study population recruitment started with 30 high-risk and 30 resilient “seeds” identified by community partners. The seeds served as the initial means of contact to recruit other enrollees using the RDS procedures. Each study participant recruited by the initial seed recruited up to three additional social network members in successive waves into the study population.

### Study approval

Approval for the study was obtained from the Institutional Review Board for Not Human Subjects Research (NHSR) use at the University of Alabama at Birmingham (UAB).

### Instrumentation

Structured questionnaires were used to collect information on socio-demographic, and health factors. Participants were also assessed on risk and protective behaviors related to weapon carrying, gun carrying, violence, social networks and factors related to their communication.

### Outcome Variables

The main outcomes of interest for this secondary analysis were weapon carrying and gun carrying. These were measured using the “Weapons, Violence and Delinquency Screening” adapted from the 2009 Youth Risk Behavior Surveillance System Questionnaire [CDC] and the Abbreviated Natural History Questionnaire (CDC, 2009). Weapon carrying was measured by asking the participants about how many days they carried a weapon such as a gun, knife or club in the past 30 days. Likewise, gun carrying was

measured by asking participants about how many days they carried a gun in the past 30 days.

#### Predictor Variables

##### *Demographic Variables*

Socio-demographic information was obtained to include: age, gender, marital status, religion (“do you consider yourself part of a religion or a religious person?”), education (“what is the highest grade of school you have completed?”), own income (“how much money did you make last year?”), number of hours worked (in a typical week), network of social support (“how many people do you usually hang around with?”), confidence in handling problem, total negative influence score (“how much do family and peers encourage high risk behaviors – substance use, practice of unsafe sex, use of violence to solve problems, criminal behavior?”), total positive influence score (“how much do family and peers discourage high risk behaviors – substance use, practice of safe sex, use of violence to solve problems, criminal behavior?”) and coping self-efficacy score.

##### *Zimbardo Time Perspective Inventory (ZTPI) & Transcendental-future Time Perspective Inventory (TfTPI)*

The ZTPI (The Time Paradox) is a 56-item self-report psychometric measurement that has been utilized to produce time perspective average scores within five distinct domains or factors. Each item is measured on a five-point Likert scale ranging from (1 – very uncharacteristic) to (5- very characteristic). Factor #1: Past Negative includes ten items (see Appendix). In previous studies (CSM Fall, 1996), internal consistency (Cronbach Alpha coefficient) for this factor was  $\alpha = .82$  (Mean = 2.98, Min = 1.00 and Max = 5.00). Factor #2: Present Hedonistic has fifteen items. Internal consistency for this



factor was  $\alpha = .79$  (Mean = 3.44, Min = 2.00 and Max = 4.80). Factor #3: Future includes thirteen items. Internal consistency for this was  $\alpha = .77$  (Mean = 3.47, Min = 1.62 and Max = 4.85). Factor #4: Past Positive includes nine items. Internal consistency for this factor was  $\alpha = .80$  (Mean = 3.71, Min = 1.56 and Max = 5.00). Factor #5: Present Fatalistic with nine items. Internal consistency for this factor was  $\alpha = .74$  (Mean = 2.37, Min = 1.00 and Max = 4.67) (CSM Fall, 1996). Respondents were able to endorse more than one time perspective or factor. The variables were continuous and measured with means and standard deviations. The TtTPI is a 10-item self-report psychometric instrument that has been utilized to also produce a time perspective total score, related to belief in an afterlife. Each item is measured on a five-point Likert scale ranging from (1 – very untrue) to (5- very true). Min = 17 and Max = 50. Available data was summary scores and thus not able to reveal whether respondents answered every questions in all the domains. (Full details of these measurements and scoring instructions are in the Appendix).

#### *Coping Self-Efficacy (CSE) Scale*

This 26-item self-report questionnaire measures an individual's confidence in performing coping behaviors when faced with life challenges and threats. Each item is measured on an eleven-point scale ranging from (0 – 'cannot do at all') to (5 – 'moderately certain can do') to (10 – 'certain can do'). Internal consistency (Cronbach Alpha coefficient) for the overall CSE score was  $\alpha = .95$  (Chesney et al, 2006). Participants were asked, "When things aren't going well for you, how confident or certain are you that you can do the following": which includes items such as 'get emotional support from friends and family', 'look for something good in a negative situation', or 'try other solutions to your problems if your first solutions don't work'. Confidence in one's ability is an im-

portant prerequisite to changing coping behavior (Bandura, 1997). Increased self-efficacy has been showed to help reduce risky behavior, such as, substance use disorders (Kadden & Litt, 2011). Based on the tendency for risky behaviors to co-exist together and be perpetrated by the same individuals in an environment, it can be reasonable to posit that improved coping self-efficacy can also be beneficial in the reduction of risky behaviors like, weapon carrying and gun carrying. The higher the total score, the higher the ability of the individual to utilize appropriate coping strategies when faced with challenging and overwhelming situations.

#### *Norbeck Social Support Questionnaire*

This questionnaire was used in identifying significant persons in the life of participants and their relationship to the participants (social network factors). These significant persons are described as the people who provide personal support for the subjects. Questions were asked about levels of encouragement and discouragement with use of substances (tobacco, alcohol to get drunk and illegal or prescription drugs to get high) and levels of encouragement and discouragement with use of violence to solve problems from the identified support personnel. Ratings were made in a 5-point Likert scale ranging from “not at all” (1) to “a great deal” (5). High encouragement and discouragement scores were each compared with weapon carrying and non-weapon carrying. Results can be used to predict who among the participants will carry a weapon. (Norbeck et al, 1981)

#### *WHO – The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST version 3.0)*

This is a brief interview on the use of alcohol, tobacco products and other drugs by participants. Questions like, “in the past three months, how often have you used or

strongly desire to use substances?” and “during the past three months, how often has your use of substances led to health, social, legal or financial problems”? The result is used to assess the presence or absence of substances in participants that can be used to predict weapon carrying (WHO, 2010).

### Data Analysis Plan

Statistical analyses were done using SAS Version 9.4 statistical software (SAS Institute Inc., Cary, NC). Variables were reported as means and standard deviations for continuous variables and frequencies and percentages for categorical variables. Differences in the socio-demographic characteristics between the participants who carried or did not carry weapons were summarized using proportions and percentages, and the Chi-Square test was used to test for statistical significance. Similarly, the association of the individual Zimbardo Time Perspective elements with weapon carrying and gun carrying were examined using the Student t-test. The level of statistical significance of  $p = 0.05$  was used for all analyses. CSE was also analyzed using SAS 9.4 statistical software. Student ttest was used to compare the coping self-efficacy score between participants that carried weapon and the ones that did not. A 5% level of statistical significance was used for the analysis.

## Manuscripts

Three manuscripts presenting the results of our study follow. The first manuscript presents the results of the cross-sectional analysis of the demographic, intrinsic and extrinsic factors associated with weapon carrying.

In the second manuscript we investigated the relationship between Zimbardo Time Perspectives and Weapon Carrying using a cross-sectional study

The third manuscript presents the results of the cross-sectional study designed to determine the effect social network factors on weapon carrying among at-risk emerging adults.

DEMOGRAPHIC, INTRINSIC, AND EXTRINSIC FACTORS ASSOCIATED WITH  
WEAPON CARRYING AMONG EMERGING ADULTS LIVING IN  
DISADVANTAGED URBAN AREAS IN BIRMINGHAM

by

TOLULOPE ADUROJA, SUSAN DAVIES, OLIVIO CLAY, CRAYTON “TONY”  
FARGASON, CONNIE KOHLER, ANN ELIZABETH MONTGOMERY,

In preparation for American Journal of Public Health as a Brief Report

Format adapted for dissertation

## ABSTRACT

African Americans experience disproportionately higher rates of violence-related injury, disability and death (Bent-Goodley, 2001). While social and biological vulnerability have been shown to be important predictors of violence and weapon carrying (Begue et al, 2016), specific factors associated with weapon carrying outside social determinant variations remain poorly understood among emerging adults. We conducted a cross-sectional survey to determine factors associated with increased risk for weapon carrying involvement among emerging adults (n=344) living in disadvantaged urban areas in the southeastern U.S. Participants (110 males, 234 females, ages 15–25 years; mean=18.86 years) were recruited via respondent-driven sampling. Weapon carrying was greatly influenced by gender, substance use, current level of education, and having children ( $P < 0.05$ ). Multivariable analysis showed that gender (male vs. female), and substance use played a significant role in weapon carrying with the adjusted odds ratio [AOR] =3.2; 95% CI 1.35-7.52] and [AOR] =3.45; 95% CI 1.54-7.69 respectively. Results have policy and programmatic implications for future efforts to reduce weapon carrying among emerging adults living in disadvantaged urban areas.

## INTRODUCTION

One of the biggest challenges for the 21st century is combating youth violence and crime among African American youth and emerging adults living in disadvantaged urban areas (Dahlberg & Krug, 2002; Arnett, 2000, 2007). Emerging adults are a special population that are understudied in research and underserved in health promotion efforts, especially with regard to violence. Youth violence can be expressed through bullying; slapping; hitting; robbery; assault; emotional harm; criminal/delinquent behaviors; rape; murder (Dijkstra et al, 2011; Brown et al, 2002). Violent offenses committed with a weapon are the most dangerous offenses, often leading to serious injury, disability or death (Eaton et al, 2007; Muula et al, 2008). This study investigated factors associated with increased risk for weapon carrying involvement among emerging adults living in disadvantaged urban areas in the Deep South.

Youth violence is the 2nd leading cause of death for young people between 10 and 24 year olds (CDC, 2004, 2009). In terms of the public health impact of youth violence in the United States, the average of 16 youths is murdered daily in 2009. There is an increase utilization of the emergency rooms in 2009 (> 700,000 physical assaults cases). 32% of high school students reported being involved in physical fight in the 12 months before survey (CDC, 2009). 20% of high school students were bullied on school property in 2009. Violence in youth and young adults affects individuals, communities, health care costs, property values and social services (Planty & Truman, 2011; Voelker, 2012). Perpetrators are always in the same age group as victims. Violence disproportionately involves racial and ethnic minorities. There are 57.9 deaths per 100,000 populations

by quartiles for persons 10-24 years in Alabama (CDC, 2003). Youth violence is the 2nd leading cause of death (homicide) in Alabama just as it is nationally. Non-Hispanic Black and Hispanic males have disproportional rates higher than the national rate (49/100,000 and 33/100,000 respectively) in Alabama (CDC, 2003).

It is of paramount importance to identify and understand the unique individual modifiable risks for violence in youth and young adults (Kingery et al, 1999; Kodjo et al, 2003). Risk factors at the community level include economic deprivation; community disorganization; the availability of drugs, alcohol, and firearms; and high neighborhood crime rate (Simon et al, 1999, 1998). Public health approach provides a useful framework for addressing the relevant issues to be considered in preventing violence in youth and young adults (Black et al, 2011). The major steps involved are problem definition, risk and protective factors identification, obstacle identifications, developing and testing of prevention strategies and ensuing widespread adoption (Oetzel et al, 2006; Massetti et al, 2011). According to the results from these studies, it can be concluded that minority youths are at risk of violence (including homicides). The state of Alabama and city of Birmingham are no exception to this critical problem. However, it is unclear whether these differences are mediated by socio-demographic disparities in this population. The study identifies the socio-demographic risk and protective factors associated with weapon carrying among emerging adult men and women living in the urban area of Birmingham.



## METHODS

### Study Population and Sample Design

The sample was drawn from a population of African American youth and emerging adults (between the ages of 15 and 25 years) living in impoverished urban neighborhoods in a mid-sized southeastern community in the Deep South region of the US. This study is a secondary analysis of a larger study that investigated individual and social network contributors to health and functional outcomes during the critical period of emerging adulthood. Recognizing that transitions during emerging adulthood are strongly influenced by peer relationships and community context, this study examines both individual and social network factors. Respondent Driven Sampling (RDS) was employed (Heckathorn, 2002; Heckathorn, 1997) to access participant's peer networks as both recruitment channels and agents for change. RDS is a recent innovative adaptation of chain-referral network sampling that provides peer-driven access to hard-to-reach subpopulations while reducing sampling biases associated with conventional snowball sampling. After 4-5 recruitment waves started using initial "seed" participants, RDS results in samples with characteristics that closely approximate the target population parameters. Study participants were recruited using Respondent Driven Sampling, an improved peer-referral sampling method suitable for accessing this hard-to-reach target group. Informed consent was obtained prior to all data collection procedures. The study received approval from their institution's Investigative Review Board (IRB).

Structured questionnaires were used to collect information on socio-demographic and health factors; risk and protective behaviors related to weapon carrying; gun carrying; violence; social networks; and health communication channels. The main outcomes

of interest for this secondary analysis were weapon carrying and gun carrying. These were measured using the “Weapons, Violence and Delinquency Screening” adapted from the 2009 Youth Risk Behavior Surveillance System Questionnaire [YRBSS CDC, 2009] and the Abbreviated Natural History Questionnaire. Weapon carrying was measured by asking the participants about how many days did they carry weapon such as gun, knife or club in the past 30 days. Likewise, gun carrying was measured by asking participants about how many days did they carry gun in the past 30 days.

### Demographic Variables

Socio-demographic information was obtained using an Extended Socio-demographic Questionnaire that include: age, gender, marital status, religion (“do you consider yourself part of a religion or a religious person?”), substance use (“have you use tobacco or alcohol in the last 90 days, or have you used any illegal or prescription drugs to get high in the last 90 days?”), education (“what is the highest grade of school you have completed?”), own income (“how much money did you make last year?”), number of hours worked (in a typical week), have a sexual partners(s) (“how many sexual partners have you had in the last 90 days?”), have children (“do you have any children?”) and household income (“how much money did your household make last year?”)

### WHO – ASSIST V3.0

This is a brief interview assessing for the use of alcohol, tobacco products and other drugs by participants (WHO, 2010). Questions like, “in the past three months, how often have you used or strongly desire to use substances?” and “during the past three

months, how often has your use of substances led to health, social, legal or financial problems”? The result is used to assess the presence or absence of substances in participants that can be used to predict weapon carrying.

### Data Analysis Plan

Differences in proportions of prevalent socio-demographic parameters by behavioral mediators such as perceptions, skills and expectations that motivate behavior were measured. Other independent variables, such as, internal determinants (socio-demographic, personal, and psychological characteristics) and external determinants (neighborhood disadvantage and neighborhood assets) were measured accordingly. Statistical analyses were done using SAS Version 9.4 statistical software (SAS Institute Inc., Cary, NC). Categorical demographic variables were represented with frequencies and percentages. Differences in the socio-demographic characteristics between the participants who carried and did not carry weapons were summarized using proportions and percentages, and chi-square test was used to measure association and statistical significance. The behavioral mediators related to weapon carrying were examined. To determine the parsimonious set of predictors, variables that are significant at  $p < 0.1$  on the univariate analysis were used to build a logistic regression (multivariable) model, controlling for known risk factors and confounders. We calculated the odd ratios (OR) and binomial 95% confidence interval for each variable in our model after confounding effects of age and ethnicity were controlled. Multilevel logistic regression analyses were examined for associations between risk and protective factors and weapon involvement. All tests of hypotheses were two-tailed, with a Type I error rate fixed at 5%.

## RESULTS

The prevalence of weapon carrying in the community varied across demographic variables (Table 1). Of 344 participants, 56 (16.3%) carried a weapon while 288 (83.7%) did not. There were significant differences ( $p < 0.05$ ) between the two groups with regard to age, gender, substance use and current educational level. Also, having sexual partners and participants having children were significant among weapon carrying subjects. Among those who carried weapons, 57% carried gun while 43% carried other forms of weapons that included knives and clubs (Figure 1). The multivariate model (Table 2) showed that substance use (AOR=3.45, 95% CI: 1.54-7.75); male gender (AOR=3.19, 95% CI: 1.35-7.52); having children (AOR=2.61, 95% CI: 1.05-6.49) and age (AOR=1.23, 95% CI: 1.10-1.38) were significant in predicting emerging adults' weapon carrying. Study participants current level of education at the time of survey (AOR=1.17, 95% CI: 0.96-11.43) was not significant.

After adjustment, age, gender, substance use and having children had significant independent associations with weapon carrying in this special population. The model indicated that for every year increase in age, the odds of weapon carrying increased by 23%. Males were 3 times more likely to carry weapons than females did. Substance use was associated with more than three-fold increase in the odds of weapon carrying, and subjects with children had almost a three-fold increase in odds of weapon carrying.

## DISCUSSION

The purpose of this study was to identify the role intrinsic or internal determinants (socio-demographic, personal, and psychological characteristics) and extrinsic or external determinants (neighborhood disadvantage and neighborhood assets) play in weapon carrying. These factors were relevant and pertinent to predicting weapon carrying at a multivariate level among emerging adults living in disadvantaged urban areas in Birmingham. This study is unique in its focus on this special population of emerging adults that spans from adolescence to young adulthood living in disadvantaged urban southern communities, an environment with low neighborhood cohesion and a significant “urban health penalty” associated with a higher proportion of risk-taking behaviors and adverse consequences (Freudenberg, 2005).

Out of the study participants studied, the prevalence of weapon carrying in this population was 16.3%. While CDC 2017 YRBS data show a national prevalence rate of 15.7%, it would be expected that rates would be higher among a sample of African American emerging adults living in a high-poverty urban area, in a region of the country known for fewer and less stringent gun control laws. In this “Bible belt” region of the nation, guns are permitted to be carried in person both for protection and recreation.

Even though this study looked at a broad range of age of transition of the emerging adults from 15 years of age, individuals that were found to carry weapons were older. The mean age and standard deviation for the participants that carried weapon were 20yrs and 3.2. Even though the finding of the study showed that majority of the participants that were carrying weapons were never married/single, there was statistical difference when compared to participants that did not carry weapons. A surprising finding was the

role of children and the caring for children by participants in determining weapon carrying. There was significance in findings when compared to individuals that did not carry weapon. Explanation for this could be a differentiation in the function and role of the weapon when it comes to individuals that have children. Due to the higher prevalence of negative outcomes, lack of adequate provision of security at the local or community level, victimization and territorialism, the dynamics of weapon carrying at this point might be serving more of a protective function. People might prefer to carry weapon for safety in their neighborhood. Weapon carrying at this stage might be more beneficial to protect and defend the family from victimization from others since the expected functional security, such as police and neighborhood watch are not present. It thus becomes a 'survival of the fittest' (Strayton et al, 2011, Thurnherr et al, 2009). Another explanation for this could be deduced from the effect of "clustering" of high risk-risk behaviors in this kind of environment. Individuals that carry weapon, a form of high-risk behavior, are prone to engage in other high-risk behaviors such as, substance use and unprotected sex that leads to unplanned pregnancies and children (Forster et al, 2015; Afrashteh et al, 2017). Knowledge about this phenomenon can be helpful in the planning and evaluation of interventions when risk factors and protective factors are considered.

Several limitations of the study should be noted. Firstly, weapon carrying was derived from interview or questionnaire verbal reports that are subject to bias. Secondly, due to restriction at various levels, a limitation of our study is that we may not have enough power with all the hypotheses to detect many possible interactions with statistical significance. Thirdly, generalization of the findings of this study might be difficult because of the study design. Drawing a direct association between the different out-

come/dependent variables and predictors/independent variables might not be ascertained, or established. Further longitudinal study will be needed to adequately answer the research questions.

In conclusion, this study analyzed the associations between weapon carrying and several independent predictive variables among emerging adults that lived in these disadvantaged urban areas. Findings revealed the importance of combination of certain demographic, intrinsic and extrinsic variables that predict the individuals that end up carrying weapons in this environment. Identification of these associated risk factors will help to predict emerging adults that are at risk for weapon carrying. Also, identifying risk factors for gun carrying can have significant implications for policy and practice. Due to the high prevalence of carrying of gun as a weapon in this community coupled with analysis that showed that older emerging adults tend to carry more weapon and potential clustering, focus might need to be put on this age group for intervention. Importance of addressing ease of access and other forms of preventive and protective measures need to be looked into. Having the knowledge about these relationships might help in the development of much-needed family and community based interventions.

Table 1. Demographic characteristics of individuals based on Weapon Carrying

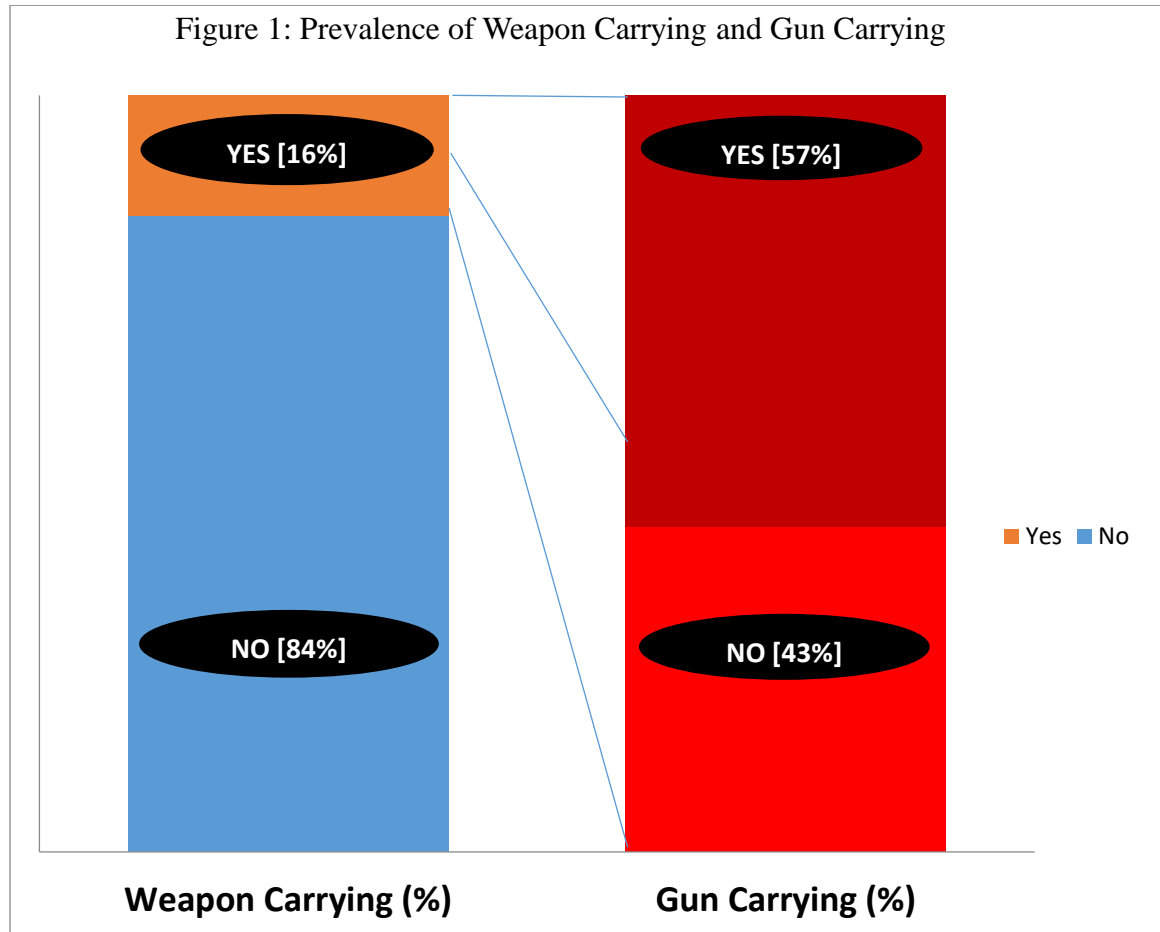
	Carrying weapon Mean (SD)		
	Yes	No	P
<b>Sub-group size</b>	56	288	
	N (%)*	N (%)	
<b>Age</b> (in years), Mean (SD)	20.1 (3.2)	18.62 (2.7)	0.002
<b>Male gender</b>	33 (58.9)	77 (26.7)	<0.0001
<b>Marital status</b>			0.41
Married/Cohabiting/Divorce	3 (5.4)	25 (8.7)	
Never married	53 (94.6)	263 (91.3)	
<b>Current level of education</b>			0.006
Not enrolled	28 (50.0)	71 (24.7)	
High school or Technical	19 (33.9)	157 (54.5)	
Community or junior college	9 (16.1)	60 (20.8)	
<b>Highest level of education completed</b>			0.006
Less than high school	21 (37.5)	165 (57.5)	
High school and above	35 (62.5)	122 (42.5)	
<b>Currently able to get paid work for at least once a week</b>	14 (25.0)	116 (40.4)	0.03
<b>Numbers of hours work per week</b>			
More than 20 hours	34 (60.7)	204 (70.8)	0.13
<b>Part of a religion or being a religious person (Yes)</b>	44 (78.6)	216 (75.0)	0.57
<b>Have a sexual partner(s) (yes)</b>	49 (89.1)	193 (67.0)	0.001
<b>Have children (yes)</b>	21 (37.5)	58 (20.1)	0.005
<b>Where lived most of the time in the past 6 months</b>			
Parent's or a relative's home	42 (75.0)	229 (79.5)	0.45
<b>Household income</b>			
Less than \$5,000/year	8 (20.5)	26 (13.9)	0.29



Table 2: Adjusted Odds Ratio (AORs) and Corresponding 95% Confidence Intervals (CI)'s for Components Associated with Weapon Carrying

Variables	AOR* (95% CI)
Male	3.19 (1.35 – 7.52)
Substance Use (last 90 days)	3.45 (1.54 – 7.75)
Married	1.45 (0.52 – 4.06)
Education (enrollment)	1.17 (0.96 – 11.43)
Having Children	2.61 (1.05 – 6.49)
Religion	1.54 (0.58 – 4.06)
Age	1.23 (1.10 – 1.38)

\* Adjusted odds ratios were generated after the confounding effects of age and ethnicity were controlled.



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TIME PERSPECTIVE AND WEAPON CARRYING AMONG AFRICAN AMERICAN  
YOUTHS LIVING IN DISADVANTAGED URBAN AREAS | ASSOCIATION  
AMONG WEAPON CARRYING AND TIME HORIZONS IN EMERGING ADULTS.

by

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## ABSTRACT

### *Background*

An individual's time perspective and coping self-efficacy have been postulated to be related to risky health behavior in adults (Zimbardo et al, 1997; Bandura, 1977). Emerging adults (15-25 years of age) comprise a special population that tends not to be studied often by researchers and not to be reached by health promotion campaigns or program management. It is important to note that what becomes a public health concern in an older population can also be prominent in youth and young adults. Hence, predicting measures that make emerging adults vulnerable to risky behavior such as, carrying of weapon, gun and the use of the weapon is an important public health issue for this group (Kodjo et al, 2003).

### *Methods*

We conducted secondary cross-sectional analysis of a field study to determine the association between the independent Zimbardo Time Perspectives and weapon carrying and gun carrying in emerging adults that live in disadvantaged urban area of the city of Birmingham, Alabama. A total of 344 participants (110 males and 234 females, ages 15-25 years with a mean of 18.86 years) were enrolled into the study population using the Respondent-Driven Sampling. During structured interviews, 56-item questions from the Zimbardo Time Perspectives Inventory (ZTPI) with ratings made on a 5-Likert scale ranging from "very uncharacteristic" (1) to "very characteristic" (5) were answered. Also, 10-item questions from the Transcendental-future Time Perspective Inventory (TfTPI) with ratings made on a 5-Likert scale ranging from "very untrue" (1) to "very true" (5) were answered. These questions were about their physical and spiritual characteristics

and beliefs. Accessing the confidence of participants in performing coping behaviors when faced with life challenges or threats was measured using the Coping Self-Efficacy Scale that consisted of 26-item questions with ratings made on an 11-Likert scale measure ranging from “cannot do at all” (0) to “certain can do” (10). Weapon carrying and gun carrying were also measured during the interview using the “Weapons, Violence and Delinquency Screening” questionnaire (YRBSS CDC, 2009).

### *Results*

Of the ZTPI constructs, the transcendental future inventory was found to have a positive association ( $p$  value of 0.056) with participants exhibiting this perspective seen more likely to carry a weapon. When the specific variable of gun carrying was the outcome, it was also the transcendental future that was statistically significant at  $p = 0.03$ . Beliefs about afterlife held in this time perspective may influence the individual’s present behavior related to weapon carrying. It is interesting to note that even though the participants might be carrying weapons or engaging in risky behaviors, they are still grounded in their beliefs that afterlife is real and they should do well and protect it. Hence, the weapon carrying or gun carrying might be more protective in this environment than for intentional physical violence. Student  $t$ -test was used for the comparisons between the two groups (weapon carriers and non-weapon carriers) on coping self-efficacy. There was no significant difference between the two groups ( $p = 0.28$ ). Both groups had a relatively high coping self-efficacy skills total (202 vs. 207) from a maximum value of 260.

### *Conclusion*

In conclusion, this study analyzed the associations between weapon carrying, gun carrying and the independent predictive variables of time perspectives and coping self-

efficacy among emerging adults that lived in disadvantaged urban areas in Birmingham, Alabama. Findings revealed that individuals who carry weapons and specifically guns in the community are associated with the time perspective variable regarding belief in after-life (Transcendental-Future) and other combination of demographic, intrinsic and extrinsic variables. Identification of these associated factors may help to predict emerging adults that are at risk for weapon carrying. On the contrary, it also helps in identifying the role that time perspectives might play in individuals that end up carrying weapon in the neighborhood (Huebner, 2011). Having the knowledge about these relationships might help in the development of much-needed individual, family and community based interventions. It also assists individuals in the community to work on planning towards achieving anticipated future goals of engaging in prosocial behaviors.



## INTRODUCTION

Time perspective was first hypothesized by Zimbardo and Boyd (1999) as a robust influence on human behavior. It identifies the distinctive separation of psychological time into past, present and future temporal frames. It was further conceived by Zimbardo as a relatively stable individual difference or process. Time perspective can be defined as a subconscious subjective cognition in which each of us attempts to relate to time in a manner that gives meaning and coherence to events in our lives. The Zimbardo Time Perspective Inventory (ZPTI) was devised to measure personal variations in time perspective and specific time perspective biases (Barnett et al, 2013, Strathman, 2008).

The ZPTI provides a researcher with a valid and reliable instrument for demonstrating the relationship between attitudes toward time and cognitive styles (Holmes & Zimbardo, 2003). Exploratory and confirmatory factor analyses have led to the discovery of five distinct time perspective domains or factors. These domains have demonstrated acceptable internal and test-retest reliability. These factors are past-negative, present-hedonistic, future, past-positive, and present-fatalistic. They each capture a coherent time perspective dimension (Zimbardo, 1999).

Studies exploring risky behaviors, such as, weapon carrying or gun carrying in youth and young adults tend to focus on understanding the modifiable intrinsic risk factors such as time perspective and coping self-efficacy, extrinsic factors such as influences from family and friends and socioeconomic status in the community that might propagate these behaviors (Brown et al, 2002). Much of the preventive and interventional studies done on risky behaviors have focused on substance use disorders in youth and young

adults, and a similar approach can be used for weapon carrying and gun carrying. A successful program for substance use is bound to be somewhat effective for weapon carrying behavior (Hawkins et al, 1992)

When we look at individuals in a community who are going through similar predicaments, not all of them present with problems and difficulties. There appears to be an innate being, a psychological mindedness and psychic template that propel someone to succeed or not succumb to problems such as drugs or weapon carrying in a neighborhood that is not thriving. Two factors that might affect resilience in this population are the individual's time perspective and his or her coping self-efficacy. Time perspective, as measured using the Zimbardo Time Perspective Inventory and Transcendental-future Time Perspective Inventory, includes items relating to future orientation (Zimbardo et al, 1999). An individual utilizing this type of perspective focuses more on the future and sometimes the afterlife rather than past and present (Alvos et al, 1993; Henson et al, 2006). Thus, those having an orientation more toward their future and their goals are less likely to participate in risky behaviors. Similarly, individuals with a high level of self-efficacy for coping with problems are more likely to resist risky behaviors, attract desirable behaviors and demonstrate better functioning (Bandura, 1997)

Weapon carrying is associated with internalizing and externalizing factors that tend to affect the way decisions are made by an individual. The intrinsic factors have been known to be internal qualities that make us make decisions the way we make them. (Barlas et al, 2006; Stayton, 2011). Weapon carrying and gun carrying can be put in place as a form of protection or as a weapon that can be used to harm others (Hemenway &

Miller, 2004). Violence in youths and young adults can be expressed through bullying; slapping; hitting; robbery; assault (with or without weapon); emotional harm; criminal/delinquent behaviors; rape; murder. The young person can be a victim, an offender, or a witness to the violence (Dahlberg et al, 2002).

Violent offenses committed with a weapon are the most dangerous offenses, often leading to serious injury, disability or death. Youth violence disproportionately involves racial and ethnic minorities. There are 9.9-57.9 deaths per 100,000 populations by quartiles for persons 10-24 years in Alabama (CDC, 2003). Youth violence is the second leading cause of death (homicide) in Alabama just as it is nationally. Non-Hispanic Black and Hispanic males have disproportional rates higher than the national rate (49/100,000 and 33/100,000 respectively) in Alabama. It is thus of paramount importance to identify and understand the unique individual modifiable risks for youth violence. The gigantic costs of public health care (\$18 billion spent in 2017, CDC) (YRBS, 2017) that result from these risky behaviors cannot be overemphasized. Hence, identification of factors that can lead to more engagement of those exhibiting negative risky behavior or tapering of them needs to be looked into (Black et al, 2011). Weapon carrying and gun carrying can be predicted by studying the time perspective.

African American emerging adults are a special population that tend not to be studied often by researchers and not to be reached by health promotion campaigns or program management (Viswanathan et al, 2012). This study investigated intrinsic and deep-seated psychological variables in the form of time perspectives and coping efficacy

that might predict weapon carrying and utilization among emerging adults living in disadvantaged urban areas of Birmingham, Alabama.

## MATERIALS AND METHODS

### *Study Design*

We conducted a cross-sectional survey to determine the relationship and association between the two intrinsic factors, individual Zimbardo Time Perspectives and coping self-efficacy, and weapon carrying and gun carrying in emerging adults that live in disadvantaged urban area of the city of Birmingham, Alabama. A total of 344 individual were enrolled into the study population.

### *Recruitment and Target Population*

The study participants were recruited for the Community Influences Transitions of Youth (CITY) Health project investigating resilience, risk, and protective behavioral health factors in emerging adults in disadvantaged neighborhoods in the Birmingham-Hoover, AL metropolitan area. Recruitment was conducted using Respondent Driven Sampling (Heckathorn, 2002, 1997), since the target population was in a transitional phase marked by instability and change (Vlahov et al, 2004).

This study investigated weapon-carrying use among African Americans ages 15 to 25. The years spanning adolescence to young adulthood comprise a distinctive developmental period, often termed emerging adulthood; it also is the developmental stage when substance use and other risk behaviors are higher (Arnett, 2000, 2005, 2007). The study population consisted of males and females who lived in Birmingham- Hoover MSA

communities. Children under 15 years of age were excluded since the focus was emerging adults. The study population recruitment started with 30 high-risk and 30 resilient “seeds” identified by community partners. The seeds served as the initial means of contact to recruit other enrollees using the RDS procedures. Each study participant recruited by the initial seed, recruited up to three social network members in successive waves into the study population. A total of 344 individual were enrolled into the study population. There were no gender differences in age, formal education, marital status and religious affiliation and place of abode in the last 6 months.

#### *Study approval*

Approval for the study was obtained from the Institutional Review Board for Not Human Subjects Research (NHSR) use at the University of Alabama at Birmingham (UAB).

## MEASURES

#### Outcome Variables:

The main outcomes of interest for this secondary analysis were weapon carrying and gun carrying. These were measured using the “Weapons, Violence and Delinquency Screening” adapted from the 2009 Youth Risk Behavior Surveillance System Questionnaire [CDC] and the Abbreviated Natural History Questionnaire (YRBSS CDC, 2009). Weapon carrying was measured by asking the participants about how many days did they carry weapon such as gun, knife or club in the past 30 days. Likewise, gun carrying was

measured by asking participants about how many days did they carry gun in the past 30 days.

Predictor Variables:

#### *Demographic Variables*

Socio-demographic information was obtained to include: age, gender, marital status, religion (“do you consider yourself part of a religion or a religious person?”), education (“what is the highest grade of school you have completed?”), own income (“how much money did you make last year?”), number of hours worked (in a typical week), network of social support (“how many people do you usually hang around with?”), confidence in handling problem, total negative influence score (“how much does family and peers encourage high risk behaviors – substance use, practice of unsafe sex, violence use to solve problems, criminal behavior?”), total positive influence score (“how much does family and peers discourage high risk behaviors – substance use, practice of safe sex, violence use to solve problems, criminal behavior?”) and coping self-efficacy score.

#### *Zimbardo Time Perspective Inventory (ZTPI) & Transcendental-future Time Perspective Inventory (TfTPI)*

In this study, subjects were made to answer how much of their thinking and feelings are spent in the past, present, future and transcendental future while assessing whether their perspectives turn out to be positive or negative. This study measured all the 5 major domains (past negative, present hedonistic, future, past positive and present fatalistic) and the transcendental future domain while using it to predict possibility of participants carrying weapons. Hence these domains can be used as potential diagnostic, thera-

peutic and predictive tools for risky behavioral outcomes in emerging adults living in disadvantaged urban communities of Birmingham.

The ZTPI is a 56-item self-report psychometric measurement that has been utilized to produce time perspective average scores within five distinct domains or factors. Each item is measured on a five-point Likert scale ranging from (1 – very uncharacteristic) to (5- very characteristic). Factor #1: Past Negative with ten items. In previous studies, internal consistency for this factor based on Cronbach's was  $\alpha = .82$  (Mean = 2.98, Min = 1.00 and Max = 5.00). Factor #2: Present Hedonistic with fifteen items. Internal consistency for this factor based on Cronbach's was  $\alpha = .79$  (Mean = 3.44, Min = 2.00 and Max = 4.80). Factor #3: Future with thirteen items. Internal consistency for this factor based on Cronbach's was  $\alpha = .77$  (Mean = 3.47, Min = 1.62 and Max = 4.85). Factor #4: Past Positive with nine items. Internal consistency for this factor based on Cronbach's was  $\alpha = .80$  (Mean = 3.71, Min = 1.56 and Max = 5.00). Factor #5: Present Fatalistic with nine items. Internal consistency for this factor based on Cronbach's was  $\alpha = .74$  (Mean = 2.37, Min = 1.00 and Max = 4.67). The TtTPI is a 10-item self-report psychometric instrument that has been utilized to also produce time perspective total score. Each item is measured on a five-point Likert scale ranging from (1 – very untrue) to (5- very true). Min = 17 and Max = 50. {D'alessio et al, 2003; CSM Fall, 1996: Please see full details of these measurements and scoring instructions in the Appendix }

#### *Coping Self-Efficacy (CSE) Scale*

This 26-item self-report questionnaire measures an individual's confidence in performing coping behaviors when faced with life challenges and threats. Each item is

measured on an eleven-point scale ranging from (0 – ‘cannot do at all’) to (5 – ‘moderately certain can do’) to (10 – ‘certain can do’). Internal consistency for the overall CSE score based on Cronbach’s was  $\alpha = .95$  (Chesney et al, 2006). Participants were asked, “When things aren’t going well for you, how confident or certain are you that you can do the following”: ‘get emotional support from friends and family’, ‘look for something good in a negative situation’ – despite the high prevalence of risky behavior, something good can still come out of the community, or ‘try other solutions to your problems if your first solutions don’t work’. The ability to be confident in one’s ability is an important prerequisite to changing coping behavior (Bandura, 1997). CSE has been showed to help reduce risky behavior, such as, weapon carrying, gun carrying and substance use. The minimum and maximum scores for our study were 42 and 260. The higher the total score, the higher the ability of the individual to utilize appropriate coping strategies when faced with challenging and overwhelming situations. Hence, CSE scale is a useful tool for measuring an individual’s perceived ability to cope effectively with unpredictable life “curve balls”. Efficacy beliefs have been showed to predict adherence to habits that encourage prosocial behavior and prevent the carrying of weapon and gun for destructive action.

### *Statistical Analysis*

Data was analyzed using SAS 9.4 statistical software (SAS Institute Inc., Cary, NC). Differences in the socio-demographic characteristics between the participants who carried or did not carry weapons were summarized using proportions and percentages, and chi-square test was used to test for statistical significance. Similarly, the comparisons



and association of the individual Zimbardo Time Perspective elements with weapon carrying and gun carrying were examined using Student ttest. 5% level of statistical significance was used for all the analyses. CSE was also analyzed using SAS 9.4 statistical software. Student ttest was used to compare the coping self-efficacy score between participants that carried weapon and the ones that did not. Multivariate linear regression was used to assess the relationship between exposure and outcome variables. Variables that were significant in the univariate analysis at  $p < 0.10$  or less were considered for multivariate analysis. Regression diagnostics such as residual checking were used to refine the model. We controlled for potential confounders. All hypothesis tests were two tailed, with a Type 1 error rate fixed at 5%. A 5% level of statistical significance was used for the analysis.

## RESULTS

Table 1 presents descriptive statistics of the study population. The sample ( $N = 344$ ) was 68% female with 47% of participants over 18 years of age. All the participants were African Americans. The majority of participants were never married (92%) and 76% reported belonging to a religious denomination. Intrinsic and extrinsic variables and characteristics were examined to assess the differences in these variables between those who reported carrying a weapon and those who reported not carrying a weapon in the past thirty days. Table 2 shows demographic factors that were examined to predict weapon carrying in the urban population studied. Statistically significant associations with weapon carrying include number of hours worked per week, number of people the participant hangs out with and the total positive influence score (at least  $p$  value of 0.01) in the dataset. In order to assess the internal dynamics and psychological mindedness that might

predict an individual's level of resiliency in an environment that is expected to be unstable, a coping self-efficacy questionnaire was administered. The coping self-efficacy score was found not to be significantly associated ( $p$  value of 0.28) with weapon carrying. Zimbardo Time Perspectives Inventory domains were assessed for any potential interactions with weapon carrying and gun carrying.

Tables 3 and 4 show that only the transcendental future scale was found to be associated ( $p = 0.056$ ) with carrying a weapon. When a specific area of weapon carrying was used as the outcome (gun carrying), it was also the transcendental future that was statistically significant ( $p = 0.03$ ). Beliefs about afterlife held in this time perspective may influence the individual's present behavior. It is interesting to note that even though the participants might be carrying weapons or engaging in risky behaviors, they are still grounded in their beliefs that afterlife is real and they should do well and protect it. Hence, the weapon carrying or gun carrying might be more protective in this environment than for intentional physical violence.

## DISCUSSION

The purpose of this study was to determine whether certain intrinsic characteristics of emerging adults are significantly associated with weapon or gun carrying. The two major modifiable factors examined were coping self-efficacy and time perspective. Of these, only the transcendent future time perspective subscale was associated with weapon or gun carrying, and the weapon carrying p-value (0.056) did not reach the preset statistical significance level of  $\leq 0.05$ . Other intrinsic and extrinsic factors found to be associated with weapon or gun carrying were hours worked, number of people to hang out with, and a positive influence score reflecting the quality of significant individuals in the life of the subject.

Health behavior theories posit that health-relevant attitudes, beliefs, and behavioral skills drive subsequent actions people take to protect themselves from health threats (Huebner, 2011; Voelker, 2012). Utilizing a measure of coping self-efficacy of the subjects, their perceptions, attitude, knowledge and behavioral patterns can be assessed with reference to the weapon carrying and engaging in other risky behavior or avoidance of similar risky behaviors. Bandura theorizes that people draw on these symbolic capabilities to understand their environments by purposeful actions, cognitively solve problems, develop reflective thoughts and effectively communicate with others. When people symbolize their experiences, they give structure, meaning, and continuity to their lives (Zulkosky, 2009).

There were 26 questions in the coping self-efficacy measures that help pinpoint how participants handled adversities and difficulties in life. They also show how confi-

dent they can use more of the positive constructs (mastery experience, verbal persuasion and vicarious experience) and less of the negative construct (somatic and emotional states).

A Student ttest was used for the comparisons between the two groups (weapon carriers and non-weapon carriers) on coping self-efficacy. There was no significant difference between the two groups ( $p = 0.28$ ). Both groups had a relatively high coping self-efficacy skills total (202 vs. 207) from a maximum value of 260. While it is thus refreshing to think that despite the vulnerabilities, urban health penalty, severity of mental/physical conditions, lack of socio-economical standard and absence of community support and safety, individuals who live in this disadvantaged environment are still able to find alternative ways of coping positively with their condition and with what hand life has dealt them. However, as will be noted in the limitations section, certain populations have been seen to consistently report high self-efficacy levels (reference needed). It is possible that these emerging adults tend to not view themselves as lacking confidence for coping. Another explanation to this might be the existence of social desirability that could create a bias during the period of survey. There is a tendency for study respondents not to answer questions, especially surveys, in a manner that will be viewed favorably (over-reporting of more positive coping measures and under-reporting of undesirable behavior). Combining this level of self-efficacy with a future-oriented Zimbardo time perspective about live, they are able to show a high level of resilience and survival in this community.

Looking at the participants' time perspective, we would expect that their willingness to prepare for the future depends in part; on their confidence in living long enough to benefit from returns on their investment. If they perceive life to be fragile, then fatalistic

thoughts come in to their minds. Some of these are, why study hard, why create stable relationships, or delay the pleasures of potentially risky behaviors such as sex, driving or weapon carrying? Despite common wisdom, studies have found that adolescents are, if anything, less likely than adults to see themselves as relatively invulnerable, compared to their peers (Fischhoff, 2010). This study was able to look at the relationship between these domains and weapon carrying in order to answer questions about whether there are certain time perspectives that predict weapon and gun carrying. Contrary to findings in other studies of this population (Cheong et al, 2014;Tucker et al, 2015) that showed significant correlation between risk-taking behavior, such as substance use and Zimbardo Time Perspective variables, weapon carrying was not associated with any of the primary time perspectives measured in this study. However the Cheong (2014) study was based on a more sophisticated structural equation model.

These emerging adults that grew up in this disadvantaged urban neighborhood are expected to face significant challenges that can impact their mode of thinking and psychological mindedness. Existing in this environment might be expected to lead to feelings of negativism, pessimism, nonchalant attitude toward life, lack of focus on the future or striving for future, feeling of hopelessness, helplessness and cynicism (Luyckx et al, 2010). For these reasons, weapon carrying was expected to be associated with high levels of past negative perspectives, present hedonism and past fatalism. It was also expected to be associated with low scores in future, past positive and transcendental future domain of time perspectives. One reason this study did not have similar results is that the variation in average scale scores across domains and groups was relatively limited. This is discussed in the limitations section.

The association between Zimbardo Transcendental Future Time Perspective and weapon carrying was surprising. Participants who carried a weapon had a mean score of about 40 out of 50 possible points in the Transcendental Future Time Perspective and the difference in their scores from non-weapon carriers was statistically significant for gun carrying. It is surprising that the weapon carriers scored higher than non-weapon carriers. This suggests that weapon carriers when compared to non-weapon carriers believe more in a higher power, believed in afterlife, believed in miracles, believed that they will be held accountable for their actions here on earth when they die and believed that death is just a new beginning hence the need to do well while still here on earth. Our finding thus defers from previous findings (Henson et al, 2006).

Individuals who carried a gun when compared to non-gun carriers had more believe in the future. They actually view life and safety more positively even with the gun they carry. The gun carried can be a source of safety for the carrier. It is possible that individuals who carry guns might do so as a protective measure rather than for hurting or harming others.

Along with coping self-efficacy, significant variables (using 5% level of significance) with an unadjusted association with weapon carrying were included in a regression model. After adjustment, several variables were independently associated with weapon carrying. These are gender, having children; number of hours worked per week, number of people participants hang out with and the total positive influence score (Table 2).

Several limitations of the study should be noted. Firstly, weapon carrying was derived from interview or questionnaire verbal reports that are subject to bias. Secondly, due to restriction at various levels, a limitation of our study is that we may not have enough power with all the hypotheses to detect many possible interactions with statistical significance. Thirdly, generalization of the findings of this study might be difficult because of the study design. Drawing a direct association between the different outcome/dependent variables and predictors/independent variables might not be ascertain or established. Further longitudinal study will be needed to adequately answer the research questions.

In conclusion, this study analyzed the associations between weapon carrying, gun carrying and independent predictive variables (time perspectives and coping self-efficacy) among emerging adults living in disadvantaged urban areas. Findings revealed that individuals who carry weapons and specifically guns in the community are associated with the time perspective variable regarding belief in afterlife (Transcendental-Future) and other combination of demographic, intrinsic and extrinsic variables. Identification of these associated factors will help to predict emerging adults that are at risk for weapon carrying. On the contrary, it also helps in identifying the role that time perspectives might play in individuals that end up carrying weapon in the neighborhood (Huebner, 2011; Boyd & Zimbardo, 1996). Having the knowledge about these relationships might help in the development of much-needed individual, family and community based interventions. It also assists individuals in the community to work on planning towards achieving anticipated future goals. (Inform readers how to interpret ZTPI scores)

Future research on the relationship between time perspective and weapon carrying and between coping self-efficacy and weapon carrying should be carried out using more subjects, greater variation and more sophisticated analyses.

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Table 1 Descriptive socio-demographic statistics of the study population

<b>Socio-demographic</b>	<b>Frequencies (percentages)</b>
<b>Age Category</b>	
15 -18	182 (52.91)
>18	162 (47.09)
<b>Gender</b>	
Male	110 (31.98)
Female	234 (68.02)
<b>Marital Status</b>	
Married	7 (2.03)
Living with Partner	17 (4.94)
Never Married	316 (91.86)
Divorced or Separated	4 (1.16)
<b>Religion</b>	
No	84 (24.42)
Yes	260 (75.58)
<b>Education</b>	
None	1 (0.29)
Less than high School	185 (53.94)
High School Diploma	91 (26.53)
Technical Certificate	8 (2.33)
Some College	56 (16.33)
4 College Degree	2 (0.56)
<b>Own Income</b>	
\$ < \$5,000	195 (72.76)
5,000 – 9,999	47 (17.54)
10,000 – 19,999	15 (5.60)
20,000 – 29,999	5 (1.87)
30,000 – 39,999	4 (1.45)
40,000 – 49,999	2 (0.75)
<b>Carried Weapon (days)</b>	
0	288 (83.72)
1	12 (3.49)
2 or 3	7 (2.03)
4 or 5	5 (1.45)
6 or more	32 (9.30)

Table 2. Intrinsic and Extrinsic characteristics of individuals based on Weapon Carrying

	Carrying weapon Mean (SD)		<i>P value</i>
	Yes (n=56)	No (n=288)	
Number of hours work/week	16.7 (16.0)	9.1 (13.7)	0.0014
Number of people hang out with	3.6 (2.5)	4.7 (4.2)	0.01
Confidence in handling problems	7.7 (2.1)	8.05 (2.0)	0.2
Total network of social support	41.7 (23.6)	47.6 (21.6)	0.09
Total negative influence score	77.1 (51.6)	75.7 (38.7)	0.85
Total positive influence score	180.6 (108.8)	226.0 (120.3)	0.006
Coping self-efficacy total score	201.8 (32.9)	207.0 (32.9)	0.28

Table 3. Association between Zimbardo Time Perspective category and Weapon Carrying

	Carrying weapon				<i>P value</i>
	Yes (n=56)		No (n=288)		
	Mean (SD)	Min - Max	Mean (SD)	Min - Max	
<b>ZTPI Scale</b>					
ZTPI: past-negative	3.17 (0.7)	1.60 – 4.60	3.08 (0.8)	1.00 – 5.00	0.43
ZTPI: present-hedonistic	3.68 (0.6)	2.33 – 4.93	3.58 (0.5)	2.33 – 4.93	0.26
ZTPI: future	3.69 (0.6)	2.46 – 4.77	3.63 (0.6)	1.62 – 4.92	0.47
ZTPI: past-positive	3.62 (0.6)	2.11 – 4.78	3.70 (0.6)	1.67 – 5.00	0.37
ZTPI: present-fatalistic	2.80 (0.8)	1.00 – 4.56	2.67 (0.7)	1.22 – 5.00	0.21
<b>Trans Scale</b>					
Zim2_Trans_Total	39.93 (6.2)	25.00 – 50.00	38.16 (6.4)	17.00 – 50.00	<b>0.056</b>

Table 4. Association between Zimbardo Time Perspective category and Gun Carrying

	Carrying weapon				<i>P value</i>
	Yes (n=56)		No (n=288)		
	Mean (SD)	Min - Max	Mean (SD)	Min - Max	
<b>ZTPI Scale</b>					
ZTPI: past-negative	3.05 (0.8)	1.60 – 4.60	3.10 (0.8)	1.00 – 5.00	0.73
ZTPI: present-hedonistic	3.64 (0.6)	2.13 – 4.80	3.60 (0.5)	2.33 – 4.93	0.70
ZTPI: future	3.75 (0.6)	2.46 – 4.77	3.63 (0.5)	1.62 – 4.92	0.22
ZTPI: past-positive	3.75 (0.6)	2.11 – 4.78	3.68 (0.6)	1.67 – 5.00	0.56
ZTPI: present-fatalistic	2.67 (0.7)	1.44 – 4.33	2.69 (0.7)	1.00 – 5.00	0.90
<b>TfTPI Scale</b>					
Zim2_Trans_Total	41.00 (6.7)	25.00 – 50.00	38.19 (6.3)	17.00 – 50.00	<b>0.03</b>

Student ttest used for the comparisons.

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SOCIAL NETWORK FACTORS AND WEAPON CARRYING AMONG EMERGING  
ADULTS LIVING IN DISADVANTAGED URBAN AREAS IN BIRMINGHAM

by

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## ABSTRACT

### *Background*

Weapon carrying, gun carrying and other identified risk-taking behaviors are common in emerging adults living in disadvantaged urban areas. Emerging adults are experiencing a transitional phase when information with regard to the use of violence to solve problems can be influenced easily by family and peers. Investigating relationships between social network features and weapon carrying can aid in the development of community-based intervention programs. This study examined the association between weapon carrying and social network factors among emerging adults and investigated whether messages (encouraging and discouraging) from families and/or peers can predict weapon carrying and gun carrying.

### *Methods & Design*

We conducted a secondary analysis of data to determine the factors cross sectionally associated with increased risk for weapon carrying among a group of 344 emerging adults (110 males and 234 females) living in disadvantaged urban areas in Birmingham, Alabama. Participants were recruited via Respondent-Driven Sampling. Predictor variables such as, social interaction mediators (family and peer relationships characteristics; social network factors) and environmental mediators (neighborhood cohesion and social capital) were measured. We used Chi-square, Student t-test and logistic regression analysis to explore relationships.

## *Results*

Of the overall sample, 16% ( $n = 56$ ) reported having carried a weapon such as a gun, knife or club in the past 30 days. Of these, 60% were male. Age, male gender, obtaining information about violence from preachers, obtaining information about alcohol from family and obtaining information about alcohol from blogs were significantly associated with weapon carrying for both males and females. Participants whose family encouraged the use of violence to solve problems had 39% greater odds of weapon carrying ( $p=0.062$ ) and 49% greater odds of gun carrying ( $p=0.055$ ).

Discouragement by peers to use violence to solve problems is associated with 19% lower odds of carrying guns ( $p=0.085$ ). Other factors associated with weapon carrying were family encouragement to use violence ( $p=0.045$ ) and family doing less to discourage the use of violence in solving problems ( $p=0.0001$ ). The discouragement of violence in solving problems by family members emerged as a significant protective factor for participants who did not carry weapon. On the other hand, discouragement by peers to use violence to solve problems was stronger in those who did not carry weapons ( $p = 0.02$ ). When analysis was limited to carrying of guns, the above findings were similar. After adjusting for socio-demographic factors, participants whose family encouraged using violence to solve problems had 39% greater odds of weapon carrying ( $p = 0.062$ ) and 49% greater odds of carrying guns ( $p = 0.055$ ). Discouragement by peers to use violence to solve problems was associated with 19% less odds of carrying guns ( $p = 0.085$ ).

## *Conclusion*

These findings revealed statistically significant associations between social network factors and weapon carrying in emerging adults in a disadvantaged urban area. Results have importance in the designing of appropriate interventions that can limit the use of weapons to perpetrate violence in the community. Future prevention programs among emerging adults in disadvantaged communities in weapon carrying should also focus on family and peers.

## INTRODUCTION

Emerging adulthood (a known transitional phase from adolescence to young adulthood) (Arnett, 2007) defines a special population that tends not to be studied often by researchers and not to be reached by health promotion campaigns or program management (Arnett, 2000, 2005; Slutske, 2005). Vicarious and mastery experiences have been found to influence the involvement of risky behaviors in this transitional age group (Bandura, 1994). Behaviors, even if detrimental to their health, can easily be promoted by acceptance by peers and engrained by family. Living with and exposed to families that engage in unhealthy and risky behaviors with serious consequences can serve as encouragement for an individual to engage in risky behaviors such as substance use, weapon carrying or gun carrying (Hemeway, 2004; Martens et al, 2006).

Violence can be a problem among emerging adults. Violence is defined as the intentional use of threatened or actual physical force or power against another person or against a group/community that results in or has high likelihood of resulting in injury, death, physical harm or deprivation (Stayton et al, 2011).

According to 2017 data from the CDC, violence is the third leading cause of death for young people between 10 and 24 years old. Youth violence refers to harmful behaviors that can start early and continue into young adulthood (Dahlberg & Krug, 2002). In terms of the public health impact of youth violence in the United States, averages of 16 youths were murdered daily in 2009, according to CDC data from that year. Also in 2009 there was an increased utilization of the emergency rooms (> 700,000 physical assaults cases); thirty two percent (32%) of high school students reported being involved in a

physical fight in the 12 months before survey; and twenty percent (20%) of high school students were bullied on school property. (CDC, 2009)

Youth violence affects individuals, communities, health care costs, property values and social services. Perpetrators are often in the same age group as victims. Youth violence disproportionately involves racial and ethnic minorities(Eaton et al, 2007). There are up to 57.9 deaths per 100,000 populations by quartiles for persons 10-24 years in Alabama (CDC, 2003). Youth violence is the 2nd leading cause of death (homicide) in Alabama just as it is nationally. Non-Hispanic Black and Hispanic males have disproportional rates higher than the national rate (49/100,000 and 33/100,000 respectively) in Alabama.

Violence perpetrated by this group can be expressed through bullying; slapping; hitting; robbery; assault (with or without weapon); emotional harm; criminal/delinquent behaviors; rape; murder. The young person can be a victim, an offender, or a witness to the violence (Forster et al, 2015; Black et al, 2011). Violent offenses committed with a weapon are the most dangerous offenses, often leading to serious injury, disability or death (Voelker, 2012; Kingery et al, 1999).

Social network factors can be assets that contribute positively to emerging adult's behavior or they can be negative influences on behavior. Family members' beliefs that weapon carrying results in positive outcomes can lead to encouragement in the individual to want to follow the footsteps of a family member who carries weapon. A family member who carries a weapon or gun can sometimes desensitize an individual to the consequences and lethality of the behavior.

Social persuasion from peers tends to support an individual belief in himself or herself (Bandura, 1994). Peers encouraging peers to stay away from violence or use of weapons or guns can easily foster safety and sanity of the community. This particular group is actually prone to the consequences of the urban penalty. This group struggles to deal with higher prevalence of substance use disorder, school dropouts, unemployment, unintended pregnancy, STDs and violence (Begue et al, 2016, Fitzpatrick, et al, 2003; Freudenberg et al, 2005).

It is of paramount importance to identify and understand the unique individual modifiable risks for violence and weapon carrying. Risk factors at the community level include economic deprivation; community disorganization; the availability of drugs, alcohol, and firearms; and high neighborhood crime rate (Kodjo, 2003). A public health approach provides a useful framework for addressing the relevant issues to be considered in preventing violence in youth and young adults. The major steps involved are problem definition, risk and protective factors identification (Masseti et al., 2011; Oetzel et al, 2006).

This study investigated factors associated with increased risk for weapon carrying among emerging adults. It further investigated whether peers and family social network messages influenced weapon carrying positively or negatively. These messages were either encouraging or discouraging to influence violence as a way for participants in settling problems. Social network factors included participants' use of family and peers as informational sources, and network encouragement and discouragement regarding the use of violence or guns to perpetrate violence. The study hypothesized that use of family and

peers as information sources about violence will be related to or predictive of carriers of weapons and guns. Moreover, there is the prediction that level of influence by family and peers would discourage or encourage weapon carrying.

## MATERIALS AND METHODS

### *Study Location*

The study participants were recruited for the Community Influences Transitions of Youth (CITY) Health project investigating resilience, risk, and behavioral health of emerging adults in disadvantaged neighborhoods in the Birmingham-Hoover, AL metropolitan area. Recruitment was conducted using Respondent Driven Sampling (Heckathorn, 2002, 1997), since the target population was in a transitional stage marked by instability and change (Vlahov et al, 2004).

### *Target Population*

This study investigated social network factors as correlates of weapon carrying among African Americans ages 15 to 25 living in disadvantaged urban areas. The years spanning adolescence to young adulthood comprise a distinctive developmental period, often termed emerging adulthood; it also is the developmental stage when substance use and other risk behaviors are higher (Arnett, 2000, 2005, 2007). The study population consisted males and females between the ages 15 – 25 years at recruitment who lived in Birmingham-Hoover MSA communities. Children under 15 years of age were excluded since the focus was emerging adults. The study population recruitment started with 30

high-risk and 30 resilient “seeds” identified by community partners. The seeds served as the initial means of contact to recruit other enrollees using the RDS procedures. RDS was employed for peer-based recruitment and initially developed to access individuals engaged in high-risk behaviors (Heckathorn, 2002). Each study participant recruited by the initial seed, recruited up to three social network members in successive waves into the study population. A total of 344 African American participants (110 males and 234 females) were finally enrolled into the study population. There were no gender differences in age, education, marital status and religious affiliation and place of abode in the last 6 months.

#### *Study approval*

Approval for the study was obtained from the Institutional Review Board for Not Human Subjects Research (NHSR) use at the University of Alabama at Birmingham (UAB).

## MEASURES

### Outcome Variables

The main outcomes of interest for this secondary analysis were weapon carrying and gun carrying. These were measured using the “Weapons, Violence and Delinquency Screening” adapted from the 2009 Youth Risk Behavior Surveillance System Questionnaire [YRBSS CDC, 2009] and the Abbreviated Natural History Questionnaire. Weapon carrying was measured by asking the participants about how many days they carried a



weapon such as gun, knife or club in the past 30 days. Likewise, gun carrying was measured by asking participants about days they carried a gun in the past 30 days.

#### Predictor Variables:

##### *Demographic Variables*

Socio-demographic information was obtained to include: age, gender, marital status, religion (“do you consider yourself part of a religion or a religious person?”), education (“what is the highest grade of school you have completed?”), own income (“how much money did you make last year?”), number of hours worked (in a typical week), network of social support (“how many people do you usually hang around with?”), total negative influence score (“how much does family and peers encourage high risk behaviors – substance use, practice of unsafe sex, violence use to solve problems, criminal behavior?”). The measured social network variables included in the analysis were encouragement by family to use violence to solve problems, discouragement by family to use violence to solve problems, encouragement by peers to use violence to solve problems, and discouragement by peers to use violence to solve problems.

##### *Norbeck Social Support Questionnaire*

This questionnaire was used in identifying significant persons in the life of participants and their relationship to the participants (social network factors). Results can be used to predict who among the participants will carry a weapon. (Norbeck et al, 1981). Participants were asked to list significant persons in their lives and their relationship to

these persons. They were encouraged to recall all individuals that provided personal support for them or who played significant and important role in their lives. Participants then followed it up by listing up to 12 persons that served as the network members. Questions were asked and answered about the type of support received. The ranges of responses are 1 = not at all, 2 = a little, 3 = moderately, 4 = quite a bit, and 5 = a great deal. Each family member and each peer had a score within the range of 1 to 5. The total score was not used because of the varying number on people in the family and peer networks who responded to the questionnaire. Instead, the average score per participant, which adjusted for the number of people in each participant's network, was employed. Similar analyses were repeated for the comparison between who carried or did not carry guns.

### *Statistical Analysis*

We explored the relationship between network factors and weapon and gun carrying. Descriptive analysis and the relationships between demographic, social network variables were examined using the Chi-square test for comparison across groups. Data was analyzed using SAS 9.4 statistical software (SAS Institute Inc., Cary, NC). The selected social network variables were summarized using means and standard deviations, and Student t-test was used to test for statistically significant differences between weapon carriers and non-carriers. Binary logistic regression was performed for both dependent variables (carrying weapons and guns), adjusting for age, gender, level of education, marital status, employment status, having sexual partners and having children. A  $p = 0.05$  level of statistical significance was used for all the analyses.

## RESULTS

Table 1 shows the socio demographic characteristics of respondents. The majority of participants were female. Participants were evenly divided between 15-18 year olds and 19-25 year olds. Most were never married, reported having a religion, had less than a high school education and were in the lowest income bracket. Most (288; 84%) had never carried a weapon.

Table 2 shows differences between weapon carriers and non-carriers in reported sources of information about guns, alcohol, illicit drugs and violence. Weapon carriers were more likely than non-carriers to get information on guns from friends ( $p = 0.05$ ) and family members ( $p = 0.01$ ), as well as more likely to get information from family members about alcohol and illicit drugs ( $p = 0.01$  and  $0.026$ ). They were significantly less likely than non-carriers to hear from preachers about violence ( $p = 0.026$ ).

Table 3a and Figure 2 show the unadjusted associations between encouragement/ discouragement by family and friends to use violence to solve problems. Table 3b and Figure 3 show the unadjusted associations between encouragement/discouragement by family and friends to use guns to solve problems. Weapon carriers were more likely to report encouragement and less likely to report discouragement by families ( $p = 0.03$ ,  $0.008$  respectively) for both use of violence and use of guns. There was no difference between weapon carriers and non-carriers with regard to encouragement from peers to use violence or guns. Weapon carriers were less likely than non-carriers to report discouragement from peers for using violence and guns ( $p = 0.02$ ).

Logistic regression models were used to look at these associations while adjusting for socio-demographic factors. Tables 4a and 4b show the adjusted odds for each factor in weapon carriers and non-carriers for weapons and guns, respectively. After adjusting for the socio-demographic characteristics, participants whose family encouraged use of violence to solve problems had 39% greater odds of weapon carrying ( $p=0.062$ ) and 49% of gun carrying ( $p=0.055$ ). Discouragement by peers to use violence to solve problems is associated with 19% lower odds of carrying guns ( $p=0.085$ ).

Table 5 summarizes the independent variables associated with weapon carrying after entering all variables other than those in Table 4a into a logistic regression model. Significant associations with weapon carrying were found with age, male sex, obtaining information about violence from preachers, and obtaining information about alcohol from family or blogs. To determine if the association between social network and weapon carrying and gun carrying is modified by gender, a subgroup analysis by gender was done. The interaction of social network and gender was added to the significant models and gender was statistically significant but the interaction term was not.

## DISCUSSION

The purpose of this study was to determine whether certain social network factors are significantly associated with weapon or gun carrying. The factors examined were sources of information about violence and other risky behaviors and level of influence of encouragement/discouragement of violence and gun use by family and peers. We hypothesized that family and peers as sources of information on risk behaviors would influ-

ence weapon carrying and that the encouragement or discouragement of family and peers to use violence to solve problems would be associated with weapon carrying. The results showed several associations with weapon carrying including positive associations with weapon carrying for encouragement by family to use violence, male sex, and age. Discouragement from family or friends to use violence was negatively associated with weapon carrying as was obtaining information about violence from a preacher.

This study has been conducted to assess for any potential predictive link between social networks variables and weapon carrying and gun carrying. In prior research, there has been evidence of increased substance use and related problems associated with peer and family encouragement of substance use especially when a close peer used a substance (Tucker et al, 2015).

Of the overall sample studied in the community, the prevalence of weapon carrying was 16% (Figure 1). This is somewhat comparable to the nationwide prevalence of 15.7% obtained from the CDC 2017 YRBS data. Looking at the sample, 59% of the weapon carriers were males. When looking at the population of weapon carriers, 57% actually carried a gun while 43% carried other forms of weapons (knives and clubs).

The total social network and social support was found not to differentiate weapon carriers from non-carriers. This was a similar finding in an earlier study done with similar data (Dijkstra et al, 2011). It would be understandable and important to further target specific social networks in relation to weapon carrying. Weapon carrying and potential involvement in violence were associated with older aged of subjects, male gender, level of education, marital status, having children and having sexual partners.

Looking at the role of social support in this special group, it appeared that there were several factors that may predict who will end up carrying a weapon when attempting to deal with a problem. Our study showed that encouragement of participants by family to use violence to solve problems was significantly associated with those who carried weapons when compared to participants who did not carry weapons. Likewise, family appeared less likely to discourage the use of violence in solving problems among those who carried weapons ( $p = 0.008$ ). The discouragement of use of violence in solving problems by family members emerged as a protective factor as it was associated with participants that did not carry weapon. Despite risk that is expected to be associated with peers (Dijkstra et al, 2011), discouragement by peers to use violence to solve problems is stronger in those who did not carry weapons ( $p = 0.02$ ). When analysis was limited to carrying of guns, the above findings were similar.

The association between social network factors and weapon carrying and carrying guns among African American emerging adults in Birmingham, Alabama was further explored by adjusting for selected socio-demographic characteristics. Participants whose family encouraged using violence to solve problems had 39% greater odds of weapon carrying ( $p = 0.062$ ) and 49% greater odds of carrying guns ( $p = 0.055$ ). Discouragement by peers to use violence to solve problems was associated with 19% less odds of carrying guns ( $p = 0.085$ ).

Several limitations of the study should be noted. First, weapon carrying was derived from interview or questionnaire verbal reports that are subject to bias. Second, we did not have enough power with all the hypotheses to detect some possible interactions. Third, generalization of the findings of this study might be difficult because of the study

design and population. Further longitudinal study will be needed to adequately answer the research questions.

These findings showed the importance of the role of families and peers in the use of violence to solve problems. Understanding these findings will be important in designing appropriate interventions that can limit the use of weapons to perpetrate violence in the community. Families have been identified to influence risk behavior by their encouragement of participants to use violence to deal with difficult situations.

Vicarious experiences have been found to influence the perception of self-efficacy (Bandura, 1994). Living with and exposed to families that engage in unhealthy and risky behaviors that carry major consequences might influence an individual to want to carry a weapon or gun. Desired outcomes, even negative in nature, demonstrated by the family lead to encouragement of the individual to want to follow the footsteps of a family member who carries weapon. A family member who carries a weapon or gun may desensitize the severity, consequences and lethality of his or her action. Second, peers in this study appear to drive risk reduction by their discouragement of participants in the use of violence to solve problems. This appeared to be a protective measure for the participant. Social persuasion from peers tends to support an individual's belief in himself or herself. Peers encouraging peers to stay away from violence or use of weapons or guns can easily foster safety and sanity of the environment in the community. Looking at these findings, interventions should be targeted to both families and peers in the community to reduce risky behaviors, encouragement and enhance protective roles of peers respectively. Our finding is similar to the finding seen when substance use is the outcome measurement (Tucker et al, 2015).

This study is able to look into social support through family informational and peer informational measures as they predict weapon carrying and gun carrying in African American emerging adults living in disadvantaged urban areas. Understanding these social network measures will be beneficial in the initiation of community prevention programs that strongly address these social vices.



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Table 1 Descriptive socio-demographic statistics of the study population

<b>Socio-demographic</b>	<b>Frequencies (percentages)</b>
<b>Age Category</b>	
15 -18	182 (52.91)
19 – 25	162 (47.09)
<b>Gender</b>	
Male	110 (31.98)
Female	234 (68.02)
<b>Marital Status</b>	
Married	7 (2.03)
Living with Partner	17 (4.94)
Never Married	316 (91.86)
Divorced or Separated	4 (1.16)
<b>Religion</b>	
No	84 (24.42)
Yes	260 (75.58)
<b>Education</b>	
None	1 (0.29)
Less than High School	185 (53.94)
High School Diploma	91 (26.53)
Technical Certificate	8 (2.33)
Some College	56 (16.33)
4 College Degree	2 (0.56)
<b>Own Income</b>	
\$ < \$5,000	195 (72.76)
5,000 – 9,999	47 (17.54)
10,000 – 19,999	15 (5.60)
20,000 – 29,999	5 (1.87)
30,000 – 39,999	4 (1.45)
40,000 – 49,999	2 (0.75)
<b>Carrying Weapon (days)</b>	
0	288 (83.72)
1	12 (3.49)
2 or 3	7 (2.03)
4 or 5	5 (1.45)
6 or more	32 (9.30)

Table 2. Sources of information about guns, violence, alcohol and illicit drugs

	Weapon Carrying		<i>P</i>
	Yes	No	
<b>Sub-group size</b>	n = 56	n = 288	
<b>Information about gun is obtained from</b>			
Family members	32 (57.1)	111 (38.5)	0.01
Friends	37 (66.1)	149 (51.7)	0.05
School	14 (25.0)	81 (28.1)	0.63
Employer	4 (7.1)	13 (4.5)	0.41
Preacher	5 (8.9)	25 (8.7)	0.95
Internet	20 (35.7)	101 (35.1)	0.93
Message board	3 (5.4)	20 (6.9)	0.66
Blogs	5 (8.9)	19 (6.6)	0.53
Gun Network	7 (12.5)	55 (19.1)	0.24
Books or pamphlets	12 (21.4)	45 (15.6)	0.29
<b>Information about violence was obtained from</b>			
Family members	23 (41.1)	143 (49.7)	0.24
Friends	21 (35.7)	135 (46.9)	0.20
School	18 (32.1)	121 (42.0)	0.17
Employer	5 (8.9)	19 (6.6)	0.53
Clinic	7 (12.5)	44 (15.3)	0.59
Preacher	3 (5.4)	49 (17.0)	0.026
Internet	15 (26.8)	107 (37.2)	0.14
Message board	4 (7.1)	28 (9.7)	0.54
Blogs	3 (5.4)	21 (7.3)	0.60
Network	6 (10.7)	47 (16.3)	0.29
Books or pamphlets	10 (17.9)	58 (20.1)	0.69
<b>Information about alcohol was obtained from</b>			
Family members	43 (76.8)	170 (59.0)	0.01
Friends	42 (75.0)	195 (67.7)	0.28
School	17 (30.4)	108 (37.5)	0.30
Employer	6 (10.7)	16 (5.6)	0.15
Clinic	16 (28.6)	65 (22.6)	0.33
Preacher	8 (14.3)	44 (15.3)	0.85
Internet	15 (26.8)	97 (33.7)	0.31
Message board	5 (8.9)	29 (10.1)	0.79
Blogs	9 (16.1)	23 (8.0)	0.06
Network	13 (23.2)	58 (20.1)	0.60
Books or pamphlets	12 (21.4)	46 (16.0)	0.32
<b>Information about illicit drugs was obtained from</b>			
Family members	32 (57.1)	118 (41.0)	0.026
Friends	35 (62.5)	165 (57.3)	0.47
School	16 (28.6)	89 (30.9)	0.73
Employer	6 (10.7)	19 (6.6)	0.28
Clinic	21 (37.5)	71 (24.65)	0.047
Preacher	4 (7.1)	25 (8.7)	0.70
Internet	15 (26.8)	92 (31.9)	0.44
Message board	8 (14.3)	29 (10.1)	0.35
Blogs	3 (5.4)	20 (6.9)	0.66
Network	5 (8.9)	63 (21.9)	0.026
Books or pamphlets	7 (12.5)	45 (15.6)	0.55

Frequencies and percentages except stated otherwise. Missing data: Highest level of education completed =1, currently unable to get paid work for at least once a week =1

Table 3a. Association (unadjusted) between social networks factors and carrying **weapons**

	Carrying Weapon		<i>P value</i>
	Yes (n=56)	No (n=288)	
	Mean (SD)	Mean (SD)	
Encouragement by family to use violence to solve problems	1.67 (1.0)	1.40 (0.9)	0.03
Discouragement by family to use violence to solve problems	2.08 (3.1)	3.46 (5.3)	0.008
Encouragement by peers to use violence to solve problems	1.18 (1.2)	1.22 (0.9)	0.8
Discouragement by peers to use violence to solve problems	2.48 (2.0)	3.21 (2.2)	0.02

Table 3b. Association (unadjusted) between social networks factors and carrying **guns**

	Carrying Guns		<i>P value</i>
	Yes (n=32)	No (n=312)	
	Mean (SD)	Mean (SD)	
Encouragement by family to use violence to solve problems	1.81 (1.1)	1.41 (0.9)	0.045
Discouragement by family to use violence to solve problems	1.54 (2.1)	3.41 (5.2)	0.0001
Encouragement by peers to use violence to solve problems	1.32 (1.2)	1.2 (0.9)	0.62
Discouragement by peers to use violence to solve problems	2.26 (1.9)	3.18 (2.2)	0.015

Student ttest used for all.

Scale grade: 1 = not at all ; 2 = a little; 3 = moderately; 4 = quite a bit; 5 = a great deal

Table 4a. Association of social networks factors with carrying weapons based on adjustment for socio-demographic factors\* (logistic regression)

	Unadjusted			Adjusted		
	OR	95% CI	<i>P-value</i>	OR	95% CI	<i>P-value</i>
Encouragement by family to use violence to solve problems	1.34	1.10 – 1.78	<b>0.039</b>	1.39	0.98 – 1.97	<b>0.062</b>
Discouragement by family to use violence to solve problems	0.92	0.84 – 1.01	0.065	0.97	0.88 – 1.06	0.45
Encouragement by peers to use violence to solve problems	0.95	0.72 – 1.28	0.777	1.02	0.73 – 1.43	0.89
Discouragement by peers to use violence to solve problems	0.86	0.75 – 0.98	<b>0.02</b>	0.87	0.73 – 1.05	0.14

Abbreviation: CI = Confidence Interval

\*Socio-demographic factors adjusted for were age, level of education, marital status, employment status, having sexual partners and having children.

Table 4b. Association of social networks factors with carrying guns based on adjustment for socio-demographic factors\* (logistic regression)

	Unadjusted			Adjusted		
	OR	95% CI	<i>P-value</i>	OR	95% CI	<i>P-value</i>
Encouragement by family to use violence to solve problems	1.48	1.07 – 2.04	<b>0.018</b>	1.49	0.99 – 2.24	<b>0.055</b>
Discouragement by family to use violence to solve problems	0.85	0.72 – 0.99	<b>0.049</b>	0.88	0.74 – 1.06	0.18
Encouragement by peers to use violence to solve problems	1.11	0.79 – 1.55	0.549	1.11	0.75 – 1.65	0.59
Discouragement by peers to use violence to solve problems	0.82	0.69 – 0.98	<b>0.026</b>	0.81	0.64 – 1.03	<b>0.085</b>

Abbreviation: CI = Confidence Interval

\*Socio-demographic factors adjusted for were age, level of education, marital status, employment status, having sexual partners and having children.

Table 5. Independent variables identifying individual carrying weapons (Logistic Regression)

	$\beta$ (SE)	OR	95% Confidence Interval	P-value
Age	0.21 (0.05)	1.23	1.10 – 1.38	0.0002
Male gender	0.83 (0.17)	5.32	2.73 – 10.37	<0.0001
Obtaining information about violence from preachers	-1.10 (0.34)	0.11	0.03 – 0.43	0.002
Obtaining information about alcohol from family	0.55 (0.19)	3.00	1.44 – 6.24	0.003
Obtaining information about alcohol from blogs	0.72 (0.25)	4.26	1.58 – 11.44	0.004

Figure 1: Prevalence of weapon carrying and gun carrying

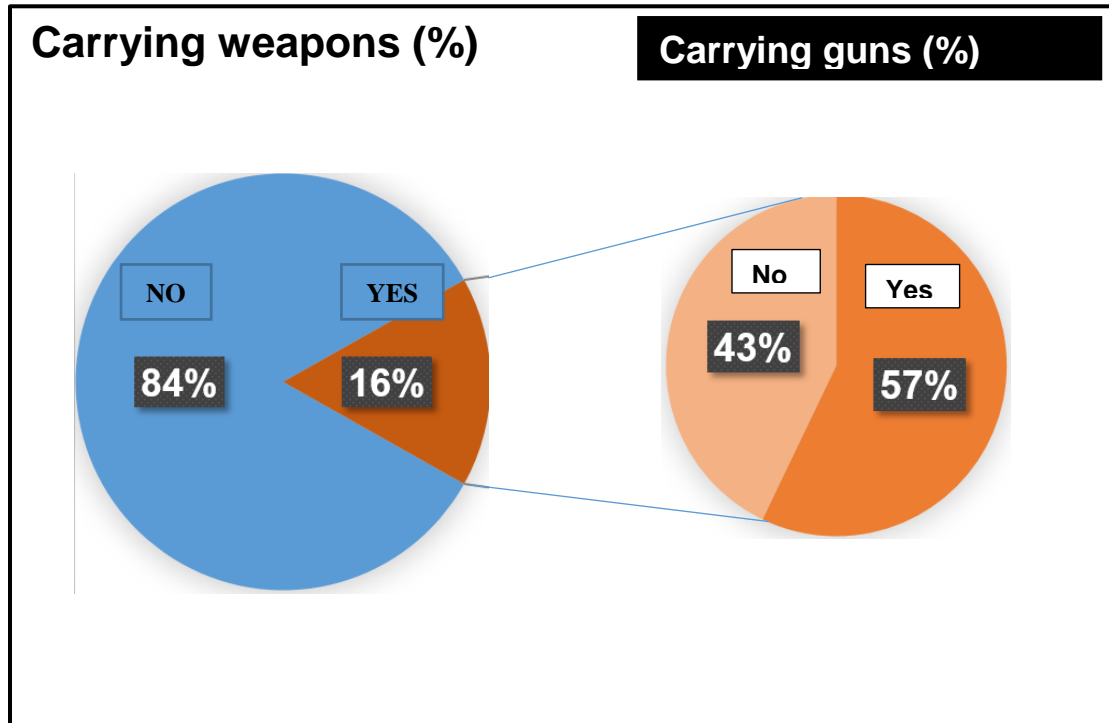


Fig 2: Association (Unadjusted) between social network factors and weapon carrying

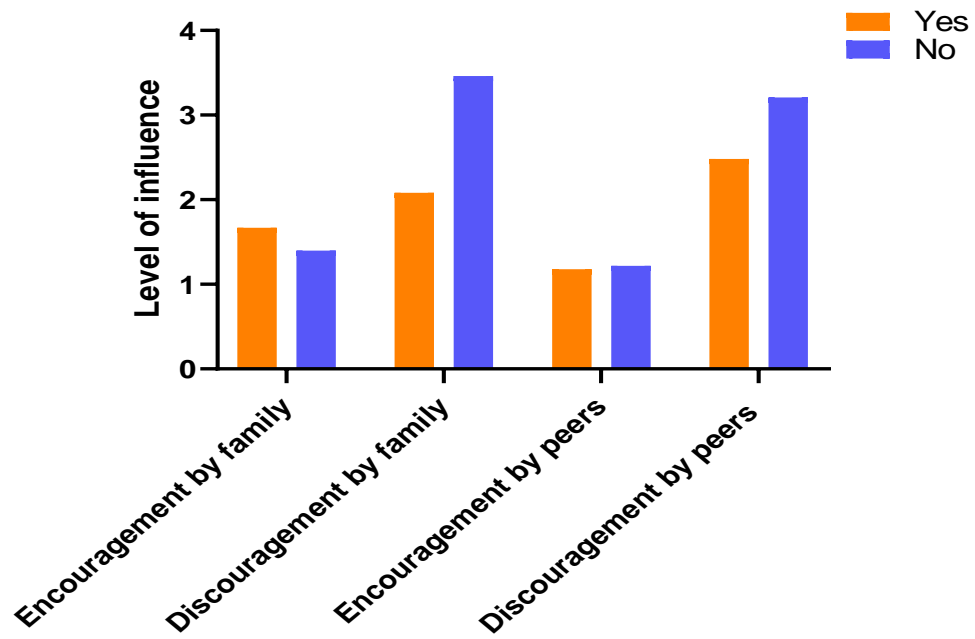
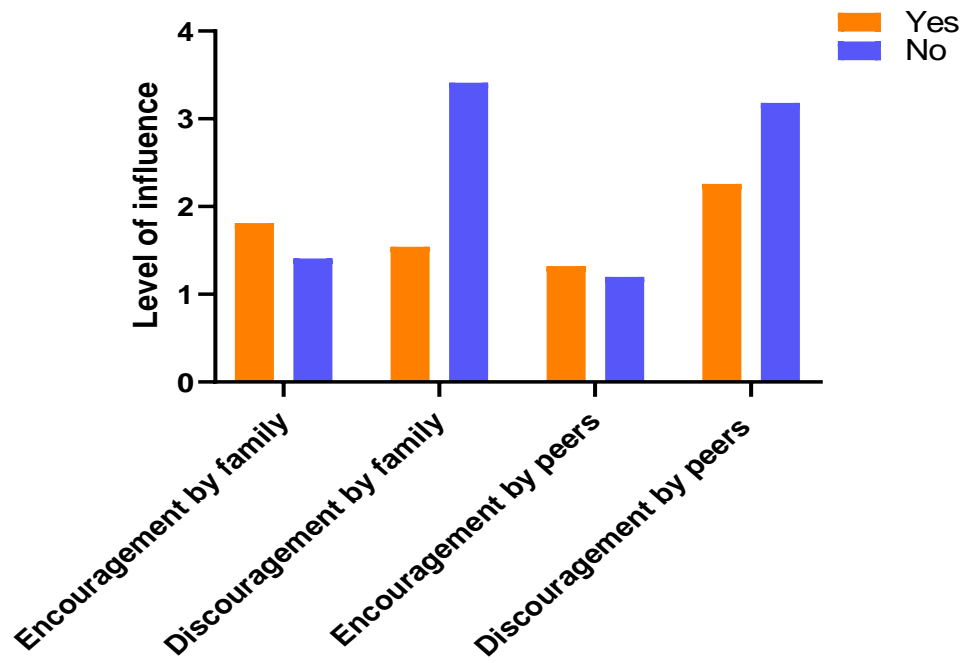




Fig 3: Association (Unadjusted) between social network factors and carrying guns



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## CONCLUSIONS

### **PAPER 1: DEMOGRAPHIC, INTRINSIC, AND EXTRINSIC FACTORS ASSOCIATED WITH WEAPON CARRYING AMONG EMERGING ADULTS LIVING IN DISADVANTAGED URBAN AREAS IN BIRMINGHAM**

In conclusion, the overall sample, 16.3% (n = 56) reported having carried weapon. Of these, 58.9% were male (male vs female adjusted odds ratio [AOR], 3.2; 95% confidence interval [CI], 1.35-7.52). Our result showed that 50% of participants not enrolled in school were more likely to carry weapon compared to 24.7% among those who did not carry weapon. Several variables with independent association with weapon carrying in this special population were found to be significant. These were age, gender, substance use, having children and level of education. The model interpretation for the data analysis showed evidence that for every year increase in age, the odds of weapon carrying increased by 23%. Males were found to be 3 times more likely to carry weapons than females did.

### **PAPER 2: TIME PERSPECTIVE AND WEAPON CARRYING AMONG AFRICAN AMERICAN YOUTHS LIVING IN DISADVANTAGED URBAN AREAS/ ASSOCIATION AMONG WEAPON CARRYING AND TIME HORIZONS IN YOUNG ADULTS**

In conclusion, this study analyzed the associations between weapon carrying, gun carrying and several independent predictive variables (time perspectives and coping self-efficacy) among emerging adults that lived in these disadvantaged urban areas. Findings revealed that individuals that end up carrying weapons and specifically guns in the community show correlation and association with important time perspective variable (Transcendental-Future). Identification of these associated factors will help to predict emerging adults that are at

risk for weapon carrying. On the contrary, it also helps in identifying the role that time perspectives might play in individuals that end up carrying weapon in the neighborhood. Having the knowledge about these relationships might help in the development of much-needed individual, family and community based interventions. It also assists individuals in the community to work on planning towards achieving anticipated future goals.

**PAPER 3: SOCIAL NETWORK FACTORS AND WEAPON CARRYING AMONG EMERGING ADULTS LIVING IN DISADVANTAGED URBAN AREAS IN BIRMINGHAM**

In conclusion, there is established association between social support variables and weapon carrying and carrying guns among African American emerging adults in this urban community in Birmingham, Alabama. Participants that obtained information about violence from preachers decreased the odds of weapon carrying by 89%. Obtaining information about alcohol from family was associated to three-fold increase in the odds of weapon carrying and also obtaining information about alcohol from blogs was associated to four-fold increase in the odds of weapon carrying.

Looking at the predictability of weapon carrying using certain social networks, participants whose family encouraged using violence to solve problems had 39% greater odds of weapon carrying ( $p = 0.062$ ) and 49% greater odds of carrying guns ( $p = 0.055$ ). Discouragement by peers to use violence to solve problems was associated with 19% less odds of carrying guns ( $p = 0.085$ ). These findings showed the importance of the role of families and peers in the use of violence to solve problems. Understanding these findings will be of immense

importance in the designing of appropriate interventions that can limit the use of weapons to perpetrate violence in the community.

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## APPENDIX

### IRB Approval Form

 **THE UNIVERSITY OF  
ALABAMA AT BIRMINGHAM**  
Office of the Institutional Review Board for Human Use

470 Administration Building  
701 20th Street South  
Birmingham, AL 35294-0104  
205.934.3789 | Fax 205.934.1301 | irb@uab.edu

#### NHSR DETERMINATION

**TO:** Aduroja, Tolulope T

**FROM:** University of Alabama at Birmingham Institutional Review Board  
Federalwide Assurance Number FWA00005960  
IORG Registration # IRB00000196 (IRB 01)  
IORG Registration # IRB00000726 (IRB 02)

**DATE:** 22-Mar-2019

**RE:** IRB-300002118  
CITY Health Core Research Project: Identifying Associated Risk with Exposure to Weapon Carrying  
Among Emerging Adults Living in Disadvantaged Urban Areas in Birmingham

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The Office of the IRB has reviewed your Application for Not Human Subjects Research Designation for the above referenced project.

The reviewer has determined this project is not subject to FDA regulations and is not Human Subjects Research. Note that any changes to the project should be resubmitted to the Office of the IRB for determination.

if you have questions or concerns, please contact the Office of the IRB at 205-934-3789.



January 9, 2019

To: Tolulope Aduroja, MD, MPH  
UAB SOPH PhD Student  
Department of Health Behavior  
Children's of Alabama

Dear Tolulope,

As Principal Investigator of the CITY Health Core Research Project (Protocol # F091105003), this letter is to state that you have been granted the permission to use the identified variables of the primary dataset we discussed for your dissertation. No identifiable private information will be provided to you, including dates of birth and zip codes.

Sincerely,

A handwritten signature in black ink, appearing to read "Susan L. Davies".

Susan L. Davies, PhD  
Professor of Health Behavior

**Health Behavior**  
227 Ryals Public Health Building  
1665 University Boulevard  
205.934.6020  
Fax 205.934.9325

The University of  
Alabama at Birmingham  
Mailing Address:  
RPHB 227  
1530 3RD AVE S  
BIRMINGHAM AL 35294-0022



**Application for Designation of  
Not Human Subjects Research (NHSR)**



- This form is to be used to request a determination by the IRB (or designated reviewer) of whether an activity is research involving human subjects.
- Complete every numbered item, using a font different from the items for your **responses**.
- Retain the order, numbering, and general layout of this form.
- Please direct questions or comments to the Office of the IRB at 205-934-3789 or [irb@uab.edu](mailto:irb@uab.edu).

**GENERAL INFORMATION**

**1. Title of Project** **CITY Health Core Research Project: Identifying Associated Risk with Exposure to Weapon Carrying Among Emerging Adults Living in Disadvantaged Urban Areas in Birmingham**

<b>2. Principal Investigator</b>	<b>Name</b>	<b>Tolulope Aduroja, M.D., MPH</b>		
	<b>Department/Division</b>	<b>Health Behavior &amp; Psychiatry</b>		
	<b>Mailing Address</b>	<b>1600 7<sup>th</sup> Avenue South, 4<sup>th</sup> Dearth, Birmingham, AL 35233</b>		
	<b>Telephone</b>	<b>205-638-5532</b>	<b>BlazerID</b>	<b>adurojt@uab.edu</b>

<b>3. Contact Person</b>	<b>Name</b>	<b>Tolulope Aduroja</b>		
	<b>Telephone</b>	<b>205-638-5532</b>	<b>Fax</b>	<b>205-638-9949</b>
			<b>BlazerID</b>	<b>adurojt@uab.edu</b>

**4. Is this activity funded in any way?** ☐ Yes ☒ No

**If yes, attach 1 copy of completed funding application and complete (a)-(d):**

<b>a. Grant or Contract Title</b>	[ title ]
<b>b. PI of Grant or Contract</b>	[ PI ]
<b>c. OSP Proposal Number</b>	[ OSP ]
<b>d. Funding Source</b>	Gov't Agency or Agencies [ name ]
	UAB Departmental Funds [ dept/div ]
	Other [ other ]

**OTHER INVESTIGATORS, SUPERVISORS**

**5. Is anyone listed as a Co- or Other investigator on this project?** ☒ Yes ☐ No

**If yes, indicate Co- or Other and complete (a)-(c) for each investigator. Copy/paste the three rows below as necessary for additional investigators.**

<b>a. Name</b>	Co- <input type="checkbox"/> Other <input checked="" type="checkbox"/> <b>Michael Scott Crawford</b>
<b>b. Job Title</b>	<b>Project Statistician</b>
<b>c. Primary UAB Dept., or non-UAB Employer</b>	<b>Health Behavior</b>

**6. Is the principal investigator (named in Item 2) a UAB student?** Yes ☒ No ☐

**If yes, provide name, phone, and BlazerID of student's supervisor, and obtain signature of supervisor.**

<b>Name</b>	<b>Susan L. Davies, PhD</b>	<b>Telephone</b>	<b>205-975-8049</b>	<b>BlazerID</b>	<b>sdavies@uab.edu</b>
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**Signature of Student's Supervisor:**



**CRITERIA FOR DETERMINATION**



7. Is the activity a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
8. Does the activity involve obtaining information about living individuals?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
9. Does the activity involve intervention or interaction with any living individuals?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
10. Does the activity involve information that is <i>individually identifiable</i> , that is, "the identity of the subject is or may readily be ascertained by the investigator or associated with the information"?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If yes, is the information private, that is, "about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, and information which has been provided for specific purposes by an individual and which the individual can reasonably expect will not be made public"?	<input type="checkbox"/> Yes <input type="checkbox"/> No
11. Does the activity involve one or more human subjects and any use of a drug other than the use of a marketed drug in the course of medical practice; that is, is it subject to FDA IND regulations?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
12. Does the activity involve one or more human subjects and any evaluation of the safety or efficacy of a medical device; that is, is it subject to FDA IDE regulations?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
13. Are the results of the project to be submitted later to, or held for inspection by, the FDA as part of an application for a research or marketing permit?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

#### ACTIVITIES INVOLVING HUMAN MATERIALS

To help the IRB determine that your project does not need further review, complete the following items.

14. Does the activity involve <i>only</i> cadaveric materials?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If yes, <b>attach</b> documentation from source.	
15. Does the activity involve <i>only</i> blood products from the Red Cross or other blood banks?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If yes, <b>attach</b> documentation from source.	
16. Does the activity involve potentially identifiable human materials, such as those from an autopsy?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If yes, describe the materials, their origin, the coding system, and plans for use: [ description ]	
17. Briefly describe the proposed research, including what materials you are obtaining and the source of those materials:	

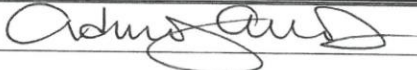
**Violence in youth and emerging adults is a public health concern that affects individuals and communities as a whole. According to CDC data, it has been known to be the second leading cause of death for young people between ages of 10 and 24 in the State of Alabama and United States. When data is further distilled in terms of race, Non-Hispanic Black males have disproportional rates higher than national rate of 49 deaths in 100,000 in the State of Alabama. Besides the carnage and devastation that violence brings upon people, it significantly increases the health care costs, property values and utilization of social services. A prominent indicator of youth violence is weapon carrying. The proposed research will investigate the major predictors and risk factors that are associated with weapon carrying among "emerging adults" aged 15 to 25 years who are transitioning from adolescence to adulthood while living in disadvantaged urban areas in Birmingham. This research also will be looking into the correlation of the Zimbardo Time Perspective Inventory with weapon carrying in this population and underlying delinquency factors and violence predictors in this population after a six-month follow-up. Data to be used for my analysis are not identifiable. All personal identifiers have been expunged from the dataset to ensure confidentiality of the study subjects and no personal identifiers will be obtained by me or the statistician at any point or from the**

data source. During this research, I plan to identify and examine several variables from the secondary dataset generated from the CITY Phase I study that will be used to answer the research questions and hypotheses generated for my three dissertation research papers.

The name (Protocol Title) of the original study source for my dissertation research is CITY Health Core Research Project. It has a Protocol Number of F091105003 and the Principal Investigator is Dr. Susan L. Davies, PhD.

Mail or deliver all IRB materials and correspondence to  
Room 470, Administration Building (AB)  
701 20th Street South, Birmingham, AL 35294-0104  
Phone 205-934-3789 — Fax 205-934-1301

**ORIGINAL, DATED SIGNATURE OF PRINCIPAL INVESTIGATOR**

<b>Signature:</b>		<b>Date:</b>	02/15/19
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**For IRB Use Only**

Notes \_\_\_\_\_

## **ZTP Inventory**

Read each item and, as honestly as you can, answer the question: “How characteristic or true is this of you?” Check the appropriate box using the scale provided. Please be sure to respond to all statements on both pages.

1 = very uncharacteristic

2 = uncharacteristic

3 = neutral

4 = characteristic

5 = very characteristic

1. I believe that getting together with friends to party is one of life’s important pleasures.
2. Familiar childhood sights, sounds, smells often bring back a flood of wonderful memories.
3. Fate determines much in my life.
4. I often think of what I should have done differently in my life.
5. My decisions are mostly influenced by people and things around me.
6. I believe that a person’s day should be planned ahead each morning.
7. It gives me pleasure to think about my past.
8. I do things impulsively.
9. If things don’t get done on time, I don’t worry about it.
10. When I want to achieve something, I set goals and consider specific means for reaching those goals.
11. On balance, there is much more good than bad in my past.
12. When listening to my favorite music, I often lose all track of time.
13. Meeting tomorrow’s deadlines and doing other necessary work comes before tonight’s play.

14. Since whatever will be will be, it doesn't really matter what I do.
15. I enjoy stories about how things used to be in the "good old days."
16. Painful past experiences keep being replayed in my mind.
17. I try to live my life as fully as possible, one day at a time.
18. It upsets me to be late for appointments.
19. Ideally, I would live each day as if it were my last.
20. Happy memories of good times spring readily to mind.
21. I meet my obligations to friends and authorities on time.
22. I've taken my share of abuse and rejection in the past.
23. I can make decisions on the spur of the moment.
24. I take each day as it is rather than try to plan it out.
25. The past has too many unpleasant memories that I prefer not to think about.
26. It is important to put excitement in life.
27. I've made mistakes in the past that I wish I could undo.
28. I feel it's more important to enjoy what you're doing than to get work done on time.
29. I get nostalgic about my childhood.
30. Before making a decision, I weight the costs against the benefits.
31. Taking risks keeps my life from becoming boring.
32. It is more important for me to enjoy life's journey than to focus only on the destination.
33. Things rarely work out as I expected.
34. It's hard for me to forget unpleasant images of my youth.
35. It takes joy out of the process and flow of my activities, if I have to think about goals, outcomes, and products.

36. Even when I am enjoying the present, I am drawn back to comparisons with similar past experiences.
37. You can't really plan for the future because things change so much.
38. My life path is controlled by forces I cannot influence.
39. It doesn't make sense to worry about the future, since there is nothing that I can do about it anyway.
40. I complete projects on time by making steady progress.
41. I find myself tuning out when family members talk about the way things used to be.
42. I take risks to put excitement in my life.
43. I make lists of things to do.
44. I often follow my heart more than my head.
45. I am able to resist temptations when I know that there is work to be done.
46. I find myself getting swept up in the excitement of the moment.
47. Life today is too complicated; I would prefer the simpler life of the past.
48. I prefer friends who are spontaneous rather than predictable.
49. I like family rituals and traditions that are regularly repeated.
50. I think about the bad things that have happened to me in the past.
51. I keep working at difficult, uninteresting tasks if they will help me get ahead.
52. Spending what I earn on pleasures today is better than saving for tomorrow's security.
53. Often luck pays off better than hard work.
54. I think about the good things that I have missed out on in my life.
55. I like my close relationships to be passionate.
56. There will always be time to catch up on my work.

### **Transcendental-future Time Perspective Inventory**

1 = very untrue 2 = untrue 3 = neutral 4= true 5 = very true

1. Only my physical body will ever die.
2. My body is just a temporary home for the real me.
3. Death is just a new beginning.
4. I believe in miracles.
5. The theory of evolution adequately explains how humans came to be 6. Humans possess a soul.
7. Scientific laws cannot explain everything.
8. I will be held accountable for my actions on earth when I die.
9. There are divine laws by which humans should live.
10. I believe in spirits.

**The Zimbardo Time Perspective Inventory (ZTPI)**  
**Psychometrics and Scoring Key**  
**(5-Factor Solution; 36.0% of variance explained)**  
(N=606)

(CSM Fall 1996 (205), Stanford Preselection Winter 1996 (76) and Spring 1996 (224) Samples), Winter 1997 (99)

## Scoring Instructions

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Before scoring the ZTPI, 5 items must be reverse coded. For the items that are reverse coded (9, 24, 25, 41, & 56):

“1” becomes a “5”  
“2” becomes a “4”  
“3” becomes a “3”  
“4” becomes a “2”  
“5” becomes a “1”

After reverse coding the 5 items, add your scores for the items that comprise each factor. After adding your scores for each factor, divide the total score by the number of questions that comprise each factor. This results in an average score for each of the five factors. These are the formulas:

**Past Negative**

Add your scores on items 4, 5, 16, 22, 27, 33, 34, 36, 50, & 54. Then divide this number by 10.

**Present Hedonistic**

Add your scores on items 1, 8, 12, 17, 19, 23, 26, 28, 31, 32, 42, 44, 46, 48, & 55. Then divide this number by 15.

**Future**

Add your scores on items 6, 9 (reverse coded), 10, 13, 18, 21, 24 (reverse coded), 30, 40, 43, 45, 51, 56 (reverse coded). Then divide this number by 13.

**Past Positive**

Add your scores on items 2, 7, 11, 15, 20, 25 (reverse coded), 29, 41 (reverse coded), & 49. Then divide this number by 9.

**Present Fatalistic**

Add your scores on items 3, 14, 35, 37, 38, 39, 47, 52, & 53. Then divide this number by 9.

Final Version  
April 2000



KMO Measure of Sampling Adequacy = .83

**Factor #1: Past Negative (Eigen = 6.86; 12.3% of var; n = 10;  $\alpha$  = .82)**

Mean=2.98 SD=.72 Min=1.00 Max=5.00

<u>No.</u>	<u>Loading</u>	<u>Question</u>
50	.759	I think about the bad things that have happened to me in the past.
16	.694	Painful past experiences keep being replayed in my mind.
34	.674	It's hard for me to forget unpleasant images of my youth.
04	.657	I often think of what I should have done differently in my life.
54	.630	I think about the good things that I have missed out on in my life.
27	.547	I've made mistakes in the past that I wish that I could undo.
22	.490	I've taken my share of abuse and rejection in the past.
36	.472	Even when I am enjoying the present, I am drawn back to comparisons with similar past experiences.
33	.434	Things rarely work out as I expected.
05	.407	My decisions are mostly influenced by people and things around me.

**Factor # 2: Present Hedonistic (Eigen = 5.01; 8.9% of var; n = 15;  $\alpha$  = .79)**

Mean=3.44 SD=.51 Min=2.00 Max=4.80

<u>No.</u>	<u>Loading</u>	<u>Question</u>
42	.707	I take risks to put excitement in my life.
31	.702	Taking risks keeps my life from becoming boring.
26	.558	It is important to put excitement in my life.
23	.515	I make decisions on the spur of the moment.
08	.506	I do things impulsively.
17	.501	I try to live my life as fully as possible, one day at a time.
48	.454	I prefer friends who are spontaneous rather than predictable.
32	.452	It is more important for me to enjoy life's journey than to focus only on the destination.
44	.448	I often follow my heart more than my head.
55	.445	I like my close relationships to be passionate.
46	.445	I find myself getting swept up in the excitement of the moment.
01	.424	I believe that getting together with one's friends to party is one of life's important pleasures.
19	.381	Ideally, I would live each day as if it were my last.
28	.360	I feel that it's more important to enjoy what you are doing than to get work done on time.
12	.323	When listening to my favorite music, I often lose all track of time.

**Factor #3: Future (Eigen = 3.54; 6.3% var; n = 13;  $\alpha$  = .77)**

Mean=3.47 SD=.54 Min=1.62 Max=4.85

<u>No.</u>	<u>Loading</u>	<u>Question</u>
13	.628	Meeting tomorrow's deadline and doing other necessary work comes before tonight's play.
40	.614	I complete projects on time by making steady progress.
45	.611	I am able to resist temptations when I know that there is work to be done.
10	.556	When I want to achieve something, I set goals and consider specific means for reaching those goals.
51	.507	I keep working at difficult uninteresting work if it will help me get ahead.

Final Version  
April 2000



18	.478	It upsets me to be late for appointments.
06	.463	I believe that a person's day should be planned ahead each morning.
21	.461	I meet my obligations to friends and authorities on time.
43	.455	I make lists of things to do.
30	.374	Before making a decision, I weight the costs against the benefits.
09	-.335	If things don't get done on time, I don't worry about it.
56	-.365	There will always be time to catch up on my work.
24	-.491	I take each day as it is rather than try to plan it out.

**Factor #4: Past Positive (Eigen = 2.53; 4.5% var; n = 9;  $\alpha$  = .80)**

Mean=3.71 SD=.64 Min=1.56 Max=5.00

<u>No.</u>	<u>Loading</u>	<u>Question</u>
07	.677	It gives me pleasure to think about my past.
29	.645	I get nostalgic about my childhood.
20	.637	Happy memories of good times spring readily to mind.
11	.627	On balance, there is much more good to recall that bad in my past.
15	.627	I enjoy stories about how things used to be in the "good old times".
02	.620	Familiar childhood sights, sounds, and smells often bring back a flood of wonderful memories.
49	.470	I like family rituals and traditions that are regularly repeated.
41	-.448	I find myself tuning out when family members talk about the way things used to be.
25	-.522	The past has too many unpleasant memories that I prefer not to think about.

**Factor #5: Present Fatalistic (Eigen = 2.21; 3.9% var; n = 9;  $\alpha$  = .74)**

Mean=2.37 SD=.60 Min=1.0 Max=4.67

<u>No.</u>	<u>Loading</u>	<u>Question</u>
38	.731	My life path is controlled by forces I cannot influence.
39	.682	It doesn't make sense to worry about the future, since there is nothing that I can do about it anyway.
14	.636	Since whatever will be will be, it doesn't really matter what I do.
37	.588	You can't really plan for the future because things change so much.
53	.455	Often luck pays off better than hard work.
03	.443	Fate determines much in my life.
35	.421	It takes joy out of the process and flow of my activities, if I have to think about goals, outcomes, and products.
47	.420	Life today is too complicated; I would prefer the simpler life of the past.
52	.338	Spending what I earn of pleasures today is better than saving for tomorrow's security.

### **Coping Self-Efficacy Scale v. 01-18-07**

When things aren't going well for you, or when you're having problems, how confident or certain are you that you can do the following:

Cannot do at all (0)

Moderately certain can do (5)

Certain can do (10)

0 1 2 3 4 5 6 7 8 9 10

For each of the following items, write a number from 0 - 10, using the scale above.

When things aren't going well for you, how confident are you that you can:

1. Keep from getting down in the dumps.
2. Talk positively to yourself.
3. Sort out what can be changed, and what can not be changed.
4. Get emotional support from friends and family.
5. Find solutions to your most difficult problems.
6. Break an upsetting problem down into smaller parts.
7. Leave options open when things get stressful.
8. Make a plan of action and follow it when confronted with a problem.
9. Develop new hobbies or recreations.
10. Take your mind off unpleasant thoughts.
11. Look for something good in a negative situation.
12. Keep from feeling sad.
13. See things from the other person's point of view during a heated argument.
14. Try other solutions to your problems if your first solutions don't work.
15. Stop yourself from being upset by unpleasant thoughts.

16. Make new friends.
17. Get friends to help you with the things you need.
18. Do something positive for yourself when you are feeling discouraged.
19. Make unpleasant thoughts go away.
20. Think about one part of the problem at a time.
21. Visualize a pleasant activity or place.
22. Keep yourself from feeling lonely.
23. Pray or meditate.
24. Get emotional support from community organizations or resources.
25. Stand your ground and fight for what you want.
26. Resist the impulse to act hastily when under pressure.

Chesney MA, Neilands TB, Chambers DB, Taylor JM, Folkman S. A validity and reliability study of the coping self-efficacy scale. *Br J Health Psychol* 2006 Sep; 11(3): 421-37.  
<http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1602207>.

We appreciate copies of manuscripts or conference presentations generated from the use of this scale to help us stay current with its use and to assess its validity and reliability in other populations.

Please address correspondence to Margaret A. Chesney, PhD, Deputy Director, National Center for Complementary and Alternative Medicine, National Institutes of Health, 31 Center Drive, Room 2B11, MSC2182, Bethesda, MD 20892-2182,