

# Development and Validation of the Youth Violence Potential Scale

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The assessment of violence risk among youth remains a priority for researchers and practitioners globally. The absence of scales designed or validated in developing countries drives the need for a psychometrically sound, alternative measure. The purpose of this article is to validate the Youth Violence Potential Scale (YVPS). The YVPS was administered twice over 12 months to 318 South African males, aged 12–24 years. Exploratory and confirmatory factor analysis of separate samples confirmed a 19-item, three-factor solution, comprised of a Deviant Peers subscale, a Pro-Gangs Attitude subscale, and a Pro-Violence Attitude subscale. The YVPS exhibited internal reliability ( $\alpha = .91$ ) and discriminant and convergent validity among its subscales. Correlation with self-reported problem behavior/offending ( $r = .48, p < .001$ ) and risk assessment from the maternal caregiver ( $r = .39, p < .001$ ) evidenced concurrent and external validity.

**Keywords:** youth violence; violence risk assessment; scale development; self-reported offending; factor analysis

This article is focused on the development and validation of an alternative measure for interpersonal violence potential among boys and young men in a high-violence context in urban South Africa. Few such instruments have been developed and validated in high-violence contexts in the global South. Given inconsistencies in the self-reported frequencies of violent offending in the two major South African youth studies (Leoschut, 2009; Reddy, Panday, et al., 2003; Reddy, James, et al., 2010), there is a need to develop dynamic, quick-to-administer measures for violence risk that exhibit solid psychometric properties and are correlated with violence perpetration (both present and, ideally, future) yet circumvent face validity issues associated with sensitive risk measures (Mills, 2005; Ondersma, Chaffin, Mullins, & LeBreton, 2005). The Youth Violence Potential Scale (YVPS) presented and validated in this article is a composite of three violence-potential-related subscales: (a) deviant criminal associations (deviant peers, hereafter); (2) attitudes favorable to gang affiliation (pro-gangs, hereafter); and (3) attitudes favorable to the use of instrumental/interpersonal violence (pro-violence, hereafter).

To address the current lack of locally tested youth violence prediction instrumentation in South Africa, the intent was to develop a dynamic risk assessment tool that can, ultimately, either be used to prescreen at-risk youth for selection for secondary treatment (when they already demonstrate high risk of current or future violence engagement through formal

gang affiliation or nonformalized peer-group violence) or to establish baseline evidence at the outset of an intervention program. The salience of criminal attitudes and associations in the etiology of youth violence has been demonstrated qualitatively in the South African context (Ward, Dawes, & Matzopoulos, 2012) but not quantitatively or psychometrically.

### **Violence in South Africa**

South Africa has, in the recent past, ranked among the highest in the world in available data of intentional homicides, peaking at 65 per 100,000 people in 1995 (United Nations Office on Drugs and Crime [UNODC], 2011), and assaults per capita, 12 per 1,000 people (UNODC, 2004), while more recent statistics suggest a decline in South Africa's homicide rate (from 49/100,000 in 2000, down to 30/100,000 in 2011 before edging up to 34/100,000 in 2016). Overall, murder rate declines in South Africa are likely due to reductions in firearm-related deaths, although variable population estimates, poor investigations, misreporting, and perverse incentives for police under-reporting may have a significant impact on certain categories of violent crime data (Bruce, 2010; Foster, 2012; Gould, Burger, & Newham, 2014).

### **Who Is Most at Risk of Violence?**

In recent South African studies, 10- to 29-year-olds accounted for nearly half of the victims of homicide and murder (Prinsloo, Kotzenberg, & Seedat, 2007), while nearly one-third of all suspects in crime-related murders were 19 years or younger (Bruce, Dissel, Gear, & Masuku, 2008). Furthermore, 76% of all young criminal offenders have themselves been victims of violent crime (Leoschut & Burton, 2006). Male perpetrators of violence in South Africa outnumber female perpetrators by between 7:1 and 13:1 (Foster, 2012). Males are also the more common victims of all nonnatural deaths, accounting for 81% of such deaths (Ratele, 2009).

Despite its prevalence, systematic research into the causes and correlates of youth violence in South Africa remains limited in scope, rigor, and effect on the practices of violence reduction and prevention.

### **The Problem of Measuring Violence in South Africa**

That South African crime data may be incomplete and inaccurate as a representation of the true incidence of crime (including many of the more serious violent crimes, see O'Regan, Pikoli, Bawa, Sidaki, & Dissel, 2014) is cause for concern among researchers, coupled with the fact that the few South African studies incorporating self-reported offending items find vastly different levels of incidence. There are only two known studies in South Africa, the National Youth Lifestyle Study (NYLS) and the Youth Risk Behaviour Survey (YRBS), that have attempted to quantify certain levels of youthful offending in nationally representative samples (Leoschut, 2009; Reddy et al., 2003, 2010).

The 2008 NYLS (Leoschut, 2009) sampled over 4,000 youth between the ages of 12 and 22 years and found 0.5% (only 22 participants) that admitted to having "ever used force, threats, or a weapon to steal money or something else." Whereas, the YRBS, conducted in 2002, 2008, and 2011 with approximately 10,000 school students in grades 8 through 11 (most aged 13–19 years), found approximately 9% who admitted to threatening or injuring someone else with a weapon at school in the month preceding the survey. Among males only, the rate of such weapon use at school was 12% in each YRBS wave.

Similarly, in the NYLS, 5.2% admitted to carrying a weapon in the previous 12 months, while between 13% and 15% disclosed carrying a weapon at school in the month preceding the survey in the YRBS waves. Lastly, in the NYLS, 0.8% “had ever physically forced someone to have sexual intercourse when they did not want to” vs. 8%–9% in the YRBS. Thus, rates of disclosure of sensitive items related to violent offending differed by three times to ten times the levels between the two nationally representative studies.

Although a portion of the lower level of disclosure in the NYLS may be attributed to social desirability in reporting to the fieldworker (the YRBS was self-completed in classrooms), participant self-completion of surveys has not become standard practice in less-developed countries, and methodological studies have not found conclusive evidence that self-completion increases disclosure in such contexts (e.g., Potdar & Koenig, 2005). Neither study validated risk-related scales or used scales or indices in their analyses.

Thus, there remains no conclusive evidence explaining the incidence and variability of youth crime, violence, and insecurity, at national or local levels in South Africa, nor a body of locally tested methods and instruments (validated scales or indices) to guide study design, data collection, and analysis. For underserved, underresourced, over-crowded communities (as in Khayelitsha, the site of this study), this paints a dire picture: violence and insecurity are daily realities, no one really knows how serious the problems are, police are underresourced, and no compelling evidence has been generated to quantify the problem and empirically test solutions.

The YVPS is developed as an alternative measure, as opposed to self-reported violent behavior, for several reasons. At the fore, measuring actual violent behavior is difficult in high-violence South African contexts, where low literacy has necessitated interviewer-assisted survey methods. Reports may come from criminal records, often challenging and costly to obtain, particularly in the frame of a prospective study. Alternatively, measures of violent behaviors can be obtained from the research participants themselves, through self-reporting and/or through parents or teachers who spend significant time with the participants (to the extent that they would be aware of such-often covert-behaviors). Criminologists who have worked on both retrospective and prospective research have found that the actual prevalence of violence is much greater than that picked up by the criminal justice system (Loeber & Farrington, 1994). Many, if not most, crimes in contexts like Khayelitsha are not reported, investigated, and successfully prosecuted (O’Regan et al., 2014). The variability in offending disclosure between the two nationally representative youth studies in South Africa, the NYLS and YRBS, underscores the complexity of measuring youthful violent offending and its antecedents.

In the criminal justice sector, new generation risk assessment tools are beginning to be developed with a focus on dynamic (changeable) factors that can enable evaluation of changing risk or potential treatment effects (Mills, 2005; Stockdale, Olver, & Wong, 2014), which are not possible to capture through static risk indicators (e.g., gender, race, resting heart rate, etc.). However, such instruments have relied on clinical and professional assessments and have rarely been developed for general populations (for prospective study) nor tested in high everyday violence contexts, including developing countries.

### **Theoretical Basis of the YVPS**

The theoretical basis for the components to be tested in the YVPS draws upon the Psychology of Criminal Conduct (PCC; Andrews & Bonta, 1994), the General Aggression Model (GAM; DeWall & Anderson, 2011), Social Bond Theory (Hirschi, 1969), Social

Learning Theory (Sutherland, 1939), Lifestyle Theory (Hindelang, Gottfredson, & Garofalo, 1978), and Routine Activities Theory (Cohen & Felson, 1979). The PCC combines social learning, cognition, and behaviors to explain criminality and identifies eight criminogenic needs (relating to prior criminal/antisocial behaviors, procriminal attitudes and associates/peers, alcohol/drug problems, family issues, education and employment, and leisure activities) that explain most triggers to offend (Andrews & Bonta, 1994). Key risk factors for further offending relate to violent attitudes, deviant peers, prior antisocial behavior or offending, and stressors in the immediate environment. The PCC is salient in bridging the domains of the individual, peer, and family, and everyday environment to predict antisocial behavior and, within the correctional services sphere, has been linked with numerous studies demonstrating the efficacy of its related diagnostic instruments (the Level of Service Inventory-Revised [LSI-R]; Gendreau, Little, & Goggin, 1996). However, these lengthy instruments, among them the LSI-R and the Psychopathy Checklist-Revised, are designed for criminal justice professionals to administer (to adults, in most cases) and evaluate within institutional settings and with access to legal and/or clinical records (Gendreau et al., 1996).

The GAM is a social-cognitive model of aggression drawing on knowledge structures to explain

how an individual perceives and interprets his or her environment and the people therein, expectations regarding the likelihood of various outcomes, knowledge and beliefs about how people typically respond in certain situations, and how much people believe they have the abilities to respond to a variety of events. (DeWall & Anderson, 2011, pp. 18–19)

In the GAM, situation and person variables can interact to trigger aggressive responses and cycles of escalating retaliation (DeWall & Anderson, 2011). As with the PCC, the GAM draws focus to the intersection of the individual (his or her person attributes, including attitudes supporting violence), the relational sphere (family and peer influences), and the environment (home, school, workplace, neighborhood, places of leisure) to explain violent behavior.

Significant evidence links peer deviance with aggression, deviant behavior, and violence (Dodge, Greenberg, & Malone, 2008). However, there is some debate on the direction of the relationship; the peers may influence an individual's behavior just as the individual's deviant behavior may lead them to seek out more deviant peers (Menard & Elliott, 1994). In either case, adolescence is characterized by a shift from a focus on the family unit to a focus on peer identity and acceptance. Being popular among one's peers may require the display of deviant behavior or the difficult choice to select new, nondeviant friends. Protective factors within the family and the school are critical to buoy an at-risk youth from seeking acceptance through deviant peers and gangs. It is within this adolescent developmental stage that the "cult of gang membership" is so dangerously seductive. Engagement in group violence, even through fighting against other neighborhood gangs, can provide a quick pathway to peer group popularity and respect, if not fear, as well as a measure of material success (if you beat someone up or kill them, you might as well take what they have of value—shoes, clothes, electronics, cash).

Strong deviant peer associations are theorized to directly impact favorable attitudes toward gangs. Such youth may already identify as gang members, believe gangs are a source of safety, respect, and support, or simply spend much of their free time in loose (or formal) gang associations. From this perspective, linked with Social Bond Theory (Hirschi, 1969), a positive attitude toward gangs would indicate more detachment from prosocial

structures, such as school and career preparation. Social Bond Theory (Hirschi, 1969) refers to the normative attachment to others and desire for their support, commitment to conventional behavior, involvement in conventional activities, and belief in common societal norms and values. The absence of such attachment, commitment, involvement, or belief, within an individual, results in a diminished social bond and higher likelihood of aberrant and potentially violent behavior.

Similar to GAM, Social Learning Theory (Sutherland, 1939) proposes that attitudes and behaviors are learned through interactions with family, friends, and peers. Just as prosocial behaviors are learned through interactions (and reinforcement), so are aggressive behaviors and responses. Social Learning Theory contributes to both the motivation for engagement in violence and the regulation of such antisocial behavior through beliefs of appropriate behavior (Bandura, 1986; Slaby & Guerra, 1988). If an individual is exposed to violent responses, he/she may develop beliefs supportive of the use of violence as a means of expression and action. Conversely, an individual who is exposed to nonviolent responses and beliefs supporting peaceful resolution of conflicts may develop their own beliefs reinforcing nonviolence. Within the attitudes toward violence domain, researchers have found evidence of subscales relating to hegemonic violence or machismo (Walker, 2005), as well as reactive violence (Funk, Elliott, Urman, Flores, & Mock, 1999).

According to Slaby and Guerra (1988, p. 581), "In addition to providing an individual with standards of conduct, beliefs can represent generalized response–outcome expectancies concerning the aggressor or the victim that support the use of aggression." This suggests the connection with exposure to violence and victimization, which often co-occur. An individual's actions are based both on a set of ideas (beliefs) about proper behavior as well as an expected response–outcome. This outcome could relate to enhanced social status (respect among peers) as well as economic gain (when related to aggravated robbery) through the use of violence (Bandura, 1973; Slaby & Guerra, 1988).

Lifestyle Theory and Routine Activities Theory suggest that individuals with greater exposure to risk in their daily lives are more likely to become victims and perpetrators, just as youth with greater unstructured time (without adult presence and potentially in conjunction with drugs or alcohol), combined with opportunities for crime or violent aggression, may be more likely to perpetrate violence.

In line with these theories, the YVPS combines deviant peer influence (deviant peers), gang affiliations and affirmations (pro-gangs), and violent attitudes (pro-violence) to represent the personal (attitudes), relational (peers, gangs), and situational/environmental (likelihood of being in a hostile environment that may give rise to aggressive and violent responses) domains. Critically, all these domains are dynamic; they can change over time and could reflect an increase or reduction in the potential for violent behavior.

### **Disclosure and Face Validity Issues for Sensitive Topics**

Within these domains, the challenge remains to gather information from respondents that is accurate and not biased by social desirability, yet related to thoughts and actions during periods of heightened emotion. Intentional violent behavior is, effectively, the decision to employ violence to achieve an outcome. It is the product of thinking (on some level, even in the heat of the moment) and can, potentially, be reflected in a subject's hypothetical attitudes toward the use of violence, both proactive and reactive (Slaby & Guerra, 1988), alongside the influence of their peers (in cases of interpersonal violence outside of the family domain). By asking a short battery of questions which probe into deviant/criminal/

gang-affiliated associations (deviant peers and pro-gangs), anger/aggressive tendencies (pro-violence), and opportunities to use violence, every respondent, even those unwilling to disclose actual deviant or violent behaviors directly, can still present a complete violence-potential score. By keeping these questions mostly hypothetical and nonincriminating, there is less connection with actual events or the fear of prosecution that could follow from the disclosure of criminal acts. Similarly, Ondersma et al. (2005) developed and validated a brief version of the Child Abuse Potential Inventory (BCAP, designed to estimate parents' risk of abusing their children), in order to reduce time required to administer, increase its usage and comprehension in community settings, and ensure that face validity was minimized to address social desirability bias, "given the sensitive nature of abuse risk assessments" (Ondersma et al., 2005, p. 302).

Thus, it is intended that the YVPS can provide a set of scores with a less skewed distribution than traditional offending scales and evidence of parametric normality that reflects the potential to use interpersonal violence. This article will, therefore, seek to validate the structure of the proposed YVPS with a general population sample in a high-violence community and provide evidence of concurrent and predictive validity.

## METHOD

### Participants and Setting

**Participants.** Participants over the two waves of study were 318 male volunteers drawn from a population living within a 600-meter radius of a youth development project in the Site B section of Khayelitsha, Cape Town (334 participants were interviewed in wave 1; subsequently, seven respondents moved out of the catchment area, eight refused to participate in wave 2 or could not be tracked down after three attempts, and one respondent died between waves). The age range was 12–24 years with a mean age of 17.7 years (standard deviation [*SD*] = 2.6). Demographics reflect high levels of poverty in the community with 32% of the participants living in informal housing (shack dwellings) and 77% of household receiving some form of government support grant. At time 2, 3% of participants were employed in full-time jobs, 4% in part-time jobs, and all respondents were still living with parents or caregivers.

In terms of school performance, 54% had failed at least 1 year of school over their careers, 12% had dropped out before reaching the final year of secondary school/grade 12 (17% of those 18 years or older had dropped out), 4% failed their grade 12 high school exit examinations (8% of those 18 years or older had failed), and 17% successfully completed high school/grade 12 (32% of those 18 years or older successfully passed). Notably, 42% of respondents 18 years or older ( $n = 67$ ), and 22% of those 21 years or older ( $n = 11$ ) were still reportedly in high school.

Over one-fourth of participants (27%) reported that their fathers were deceased, 13% that their mothers were deceased, 73% that they had witnessed someone stabbed or shot at least once, 6% that a family member had been murdered in the past 12 months, and 18% who, themselves, had been assaulted in the past 12 months. A significant number of study participants reported that a family member had been to prison (21%).

Exposure to alcohol consumption was frequent with 30% reporting visiting shebeens (informal alcohol establishments) on a daily or weekly basis (11% of 12- to 15-year-olds, 23% of 16- to 18-year-olds, and 46% of 19- to 24-year-olds) and a similar overall percent-

age (29%) reporting that they had spent R100 (approximately \$7.60 USD) or more on alcohol in the past week. This is a significant amount considering that, according to official census data, 74% of all Khayelitsha households report a monthly income of \$244 or less (equivalent to \$8/day per household; City of Cape Town, 2013).

**Setting.** The township of Khayelitsha, 30 km east of the Cape Town central business district, contains a population of approximately 425,000 people, with an estimated 75% of the 118,000 households below the upper poverty line (\$40 per person per month) and more than half living in informal dwellings with limited electricity (including street lighting), water, and sanitation services (O'Regan et al., 2014). The total number of murders in the Khayelitsha police precinct area is consistently 150–200 per annum, among the highest of any police precinct in South Africa (Crime Hub, 2013). Taken as a whole, the “Greater Khayelitsha reporting area” (combining data from all three police precincts) saw 354 murders in the 2012–2013 reporting year (O'Regan et al., 2014) or an annual murder rate of 83/100,000.

Although these murder statistics may be a fairly accurate reflection of the true incidence of this particular crime (as there is generally a body to be accounted for), most other contact crimes are likely highly under-reported in such contexts (O'Regan et al., 2014), where overcrowding, underpolicing, poverty, and opportunities for contact crime abound and residents are skeptical that reporting crimes will lead to positive outcomes. Redpath (in O'Regan et al., 2014) estimates that 40% of all crimes in Khayelitsha may go unreported. Burton (in O'Regan et al., 2014) found that most young Khayelitsha residents would not bother to report violent crime to the police, suggesting the degree to which youth involvement in violence is normalized and reporting to police, stigmatized.

## Procedure

This article makes use of data from a two-wave study of a sample of boys and young men, designed to follow the violence trajectories (and contributory factors) of study participants over a 12-month period (wave 1 interviews were conducted in March 2013 and wave 2 interviews, in March 2014). The overall interview consisted of a 17-section questionnaire administered verbally to the main male study participant by a trained field interviewer and a one-part questionnaire administered verbally to the main male participant's primary maternal caregiver (hereafter, the Maternal Risk Assessment). Verbal administration of the questionnaire was used due to variable levels of literacy among the respondents. All interviews were conducted in or near the participants' homes and in complete confidentiality. Interviews with the main participants took approximately 1 hour and anecdotal evidence suggested that this may have contributed to respondent fatigue (hence the additional need for a short, quick-to-administer scale). The research design and questionnaire were approved by the University of Cape Town Faculty of Humanities Research Ethics Committee.

## Measures

The components in the questionnaire used in this study were drawn from previous studies conducted with youth in South Africa (Leoschut, 2009; Reddy et al., 2003; Ward, Martin, Theron, & Distiller, 2007). However, of these South African studies, only Ward et al. (2007) produced scales (for peer delinquency and conduct problems) and reported confirmatory factor analysis (CFA) and reliability results.

**Deviant Peers/Criminal Associates.** This scale consisted of nine initial items ( $\alpha = .94$ ) drawn from scales used in South African studies (Leoschut, 2009; Ward et al., 2007) asking participants how many of their friends participate in risky behaviors such as buying, using or selling drugs, using alcohol or cigarettes, and skipping or dropping out of school. Response options on a 5-point Likert-like scale ranged from *none of my friends* to *5 or more friends*.

**Pro-Violence Attitude.** Tolerance toward the use of violence or Pro-Violence Attitude was assessed with a 7-item scale ( $\alpha = .94$ ) drawn from South African and international studies (Flewelling, Paschall, & Ringwalt, 1993; Houston Community Demonstration Project, 1993; Leoschut, 2009; Multisite Violence Prevention Project, 2004; Prothrow-Stith, 1987). Three items relating to the endorsement of hegemonic violence began with the stem *It is sometimes okay for people to be discriminated against or physically harassed because of their...* and ended with *nationality, race, or sexual orientation*. Two items related to reactive violence and included *if you mess with me/with my friends, you will get hurt*. Response options ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

**Pro-Gangs Attitude.** Attitudes affirming gangs and gang affiliation were measured with a 6-item scale ( $\alpha = .89$ ) drawn from both South African and international research (Leoschut, 2009; Nadel et al., 1996). Attitudinal items included *I think it's cool to be in a gang*, and affiliation items included *Some of my friends (at school) belong to gangs*. Response options ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

**Additional Measures for Cross-Validation.** Several self-report indices were administered to gather information on risk behaviors relating to substance use, problem behavior/violent offending, and victimization for cross-validation of the YVPS. This study also included a short interview with the primary maternal caregiver on the main respondent's dangerous or risky behavior both in the home and, to the extent that the caregivers were aware, outside of the home as a method of triangulation of the veracity of the respondent's self-reported problem behavior (e.g., Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998).

**Substance Use.** An adapted substance use index ( $\alpha = .70$ ) was based upon the YRBS (Reddy et al., 2003) and the Self-Reported Delinquency index from the Rochester Youth Development Study (Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003). Five items were combined to assess regular alcohol use and multiple and frequent drug use. Regular alcohol use was derived from the question: *How often in the last 12 months have you used alcohol?* Monthly use was coded as 1, Weekly use coded as 2, Daily use coded as 3, and the rest, coded as 0.

Multiple drug use combined affirmative responses to using any of the following four illicit drug categories in the past 12 months: *marijuana, sniffed glue or other inhalants to get high, tik* (methamphetamine), *any other drugs, eg. Mandrax/white pipes, Nyaope* (a local drug combining heroin, marijuana, and antiretroviral therapy medication). For each affirmative response, the follow-up question was: *How often in the last 12 months have you used (the indicated substance)?* *Once or Twice* was coded as 1, *Monthly* use was coded as 2, *Weekly* use coded as 3, and *Daily* use coded as 4. Combined scores can range from 0 (no substance use) to 19 (daily alcohol use + daily marijuana use + daily inhalants use + daily tik use + daily any other drug use).

**Victimization.** The 8-item victimization scale ( $\alpha = .61$ ) was drawn from the Juvenile Victimization Questionnaire (Finkelhor, Hamby, Ormrod, & Turner, 2005). The scale combined affirmative reports to *Did you or anyone else in your household experience ... in*



*the past 12 months?: assault (attacked, beaten up by someone); threatened with a weapon; stabbed or shot with a weapon; robbed; home burgled; theft of vehicle or bicycle; raped or sexually assaulted; murdered.*

*Problem Conduct/Self-Reported Offending.* A 7-item self-reported problem conduct/offending index (problem conduct, hereafter) was adapted from the YRBS (Reddy et al., 2003), the Rochester Youth Development Study (Thornberry et al., 2003), and the Pittsburgh Youth Study (Loeber et al., 1998). Combined Incidences–Problem Conduct past 12 months (for wave 1:  $\alpha = .53$ ; for wave 2:  $\alpha = .49$ ) is a combination of affirmative reports of engaging in the following seven acts in the past 12 months: *carrying a gun, knife, or weapon for protection; using force threats or a weapon to steal money or something else from somebody or said that you would hurt somebody if they did not do what you told them to; got into or broke into a house/building to try to steal something; set fire or tried to set fire to something on purpose; forced anyone to engage in sexual activity with you when they did not want to; used a weapon to threaten or injure someone else; and been involved in any gang fights.* Response options for each affirmative response are 1 = *once only*, 2 = *two or three times*, 3 = *four to five times*, 4 = *six or more times*. Thus, scores can range between 0 (no incidence of Problem Conduct in the past 12 months) and 28 (six or more incidences of Problem Conduct in all seven categories).

Total Incidence–Problem Conduct past 24 months ( $\alpha = .44$ ) captures the frequency responses to any affirmative response (in both wave 1 and wave 2) of having committed any of the seven acts in the previous 12 months, respectively. This measure, therefore, captures unique incidences of Problem Conduct without repetition. Scores can range from 0 (no acts in any category in the past 24 months) to 56 (Problem Conduct 6 or more times in every category in the previous 12 months in both wave 1 and wave 2).

*External Measure—Maternal Risk Assessment.* This was measured with a 10-item scale ( $\alpha = .86$ ) based on scales used in South African studies of youth that have included a parent assessment. Five items concerned the participant's conduct in the home relating to being considerate, obedient, easily upset, having a hot temper, and fighting with household members. Four items assessed problem behavior outside the home, including getting into trouble at school, work, or in the community and fighting with the participant about what he does when he is out, what time he comes home, and about having bad or dangerous friends. All items were scored from 1 (*almost always/often*) to 5 (*never*). The factor analysis for this scale appears in the Appendix.

## Analysis Plan

A multistep approach was followed to assess and validate the factor structure of the YVPS. After producing descriptive statistics, the sample was randomly split into two halves. Chi-squared tests were conducted on all YVPS component variables to ensure that group differences between the split samples were nonsignificant. Prior assessment of skewness and internal consistency across the range of items revealed that wave 2 data exhibited higher overall internal consistency and less skewed distributions (partially reflective of improved fieldwork procedures and oversight) than wave 1 data and was, therefore, selected for initial analysis and validation with the divided sample. Next, Exploratory Factor Analysis (EFA) was conducted with the wave 2 samples employing parallel analysis based on polychoric correlations in the FACTOR package, a procedure adapted for ordinal data with potential nonnormal distributions (Baglin, 2014). The initial exploratory analysis was conducted with the first random sample of cases to establish the recommended number of

factors. Following this, the same procedure was applied to the second sample to confirm this recommended number of factors. Minimum rank factor analysis with promax oblique rotation (Baglin, 2014) was then employed in the FACTOR package to extract the recommended number of factors, derive individual item factor loadings, and to evaluate which items could be dropped (due to low factor loadings and potential face validity redundancy) in order to shorten overall scale length and improve reliability. EFA was then run with the final group of reduced items for the full wave 2 sample to obtain factor loadings (threshold set at  $>.4$  for main factor loading) and fit statistics. Finally, CFA, using AMOS version 24 was conducted with wave 1 data for all 318 cases to test if the EFA factor structure (found in wave 2 data) could be confirmed with a separate sample. The CFA procedure employed the more stringent maximum likelihood method (Field, 2009) in order to confirm the presence of a unique factor solution, derive model fit statistics, and compare alternative models. A minimum threshold level for comparative fit index (CFI) was set at  $.9$ , parsimony-adjusted CFI (PCFI) above  $.5$ , chi-squared:degrees of freedom ratio ( $\chi^2/df$ ) at less than  $4.0$  (ideally, less than  $2.0$  according to Byrne, 2010), and root mean square error of approximation (RMSEA) level below  $.08$ , in line with the recommendations of Bentler and Bonett (1980) and Byrne (2010).

Following the initial CFA, theoretical considerations, factor loadings, and modification indices were reviewed to consider and test alternative models. In two models, pairs of items with theoretical relationships beyond the common latent construct (e.g., two deviant peer items relating to peer drug use, two deviant peer items relating to school, and two pro-gang items relating to friends in gangs and peer perceptions) were allowed covaried error terms. An additional model was also tested, including two pro-violence sub-factors, relating to hegemonic violence (discrimination and violence directed toward groups of people based on nationality, race, and sexual orientation) and reactive violence (direct violent responses to perceived provocation). The three models were compared based on fit statistics, face validity, and parsimony. Due to the relatively small number of cases ( $n = 318$ ), this set of factor analysis procedures (split sample EFA, followed by a full sample EFA, and, finally, a full sample CFA with a complete separate wave of data) was followed to ensure that there were sufficient case numbers for each statistical method.

Following confirmation of the final scale construction, reliability testing was conducted using both Cronbach's  $\alpha$  and McDonald's omega, an alternative measure of internal consistency that does not require the assumption of uncorrelated errors between items (Cho & Kim, 2015; Dunn, Baguley, & Brunson, 2014; McDonald, 1999). In general, reliabilities above  $.7$  are good, above  $.8$  very good, and approaching  $.9$  excellent, although scales with more items exhibit higher Cronbach's  $\alpha$  scores, necessitating cautious interpretation (Field, 2009; Kline, 2013; Terwee et al., 2007). As the items tested are based on thoughts, attitudes, and perceptions and less (or no) scientific observations, one would expect a certain degree of reduced reliability and increased measurement error, particularly among a range of young people with varying levels of education and literacy. Following square root transformation, distribution normality was also assessed for the full YVPS through examination of skewness (absolute threshold  $<2.0$ ) and kurtosis (absolute threshold  $<7.0$ ), as per Curran, West, and Finch (1996), and the Shapiro-Wilk test (threshold  $p$  values  $> .05$ ).

Pearson's product moment correlations were conducted to assess YVPS subscale inter-correlations and concurrent and external validity with the other risk measures. Predictive validity was assessed through Pearson's correlations between time 1 and time 2 measures.

## RESULTS

**Self-Reported Problem Conduct.** Table 1 details the disclosure rates for the seven Problem Conduct behaviors. In each wave, participants were asked if they had ever committed the act and, if affirmative, if they had done so in the past 12 months. Based on the affirmative responses, it is clear that more participants in the second wave disclosed conduct problems ever and conduct problems in the previous 12 months across most categories. For instance, affirmation of *use of force, threats, or a weapon to steal* increased by 533% ever and 300% in the previous 12 months, and *use of a weapon to threaten or injure someone* increased by 250% ever and 200% in the previous 12 months. This could reflect an increase in the true incidence of offending or a greater willingness from participants to disclose these behaviors. However, beyond carrying a weapon (an item that, depending on the circumstances and type of weapon, may not constitute a criminal offense), none of the participants admitted ever committing the same problem behaviors in both study waves, nor in the past 12 months in each wave of study. Thus, those who disclosed conduct problems ever in wave 1 chose not to disclose these same behaviors in wave 2 and there were no “repeat offenders,” participants reporting stable offending behaviors in each of the previous 12 months (beyond four participants who admitted to weapon carrying, again, an act that may not be a criminal offense).

All Problem Conduct measures exhibited skewness, ranging between 2.3 and 5.7 (standard error [SE] = 0.14), kurtosis, ranging between 5.3 and 40.2 (SE = 0.27), and Shapiro-Wilk  $p$  values < .001, indicating nonnormality. Although Problem Conduct disclosure rates are higher than those picked up in the NYLS, the inconsistency of disclosure and distribution are clear limitations for the viability of these measures as primary outcome indices.

### Exploratory Factor Analysis

All 22 proposed YVPS items, including the nine deviant peers items, the six pro-gangs items, and the seven pro-violence items were EFA tested in separate and combined samples. Parallel Analysis using polychoric matrices recommended a three-factor structure in each of the two split-half random samples with the deviant peers, pro-gangs, and pro-violence items all loading onto their respective scales at 0.4 or higher (Table 2).

### Confirmatory Factor Analysis

Following the EFA results, CFA was conducted to substantiate the three-factor structure found in EFA. CFA fit statistics confirmed a 19-item three-factor solution for the YVPS (Table 3, Model 3) at acceptable model fit levels. Standardized coefficients for the YVPS subscales were all significant at the  $p < .001$  level: deviant peers ( $\beta = .60$ ), pro-gangs ( $\beta = .64$ ), pro-violence ( $\beta = .56$ ), comprised of a 4-item hegemonic violence subscale ( $\beta = .81$  and a 2-item reactive violence subscale ( $[\beta = .89]$ ). In the third, best fitting model, two sets of deviant peer items and one sets pro-gangs attitude items were allowed covaried error terms based on recommended modification indices and theoretical considerations due to the fact that they have specific relationships that extend beyond the common latent factors. These include two sets of peer items (one set relating to peer drug use and one set relating to friends skipping or dropping out of school) and one set of pro-gangs items (relating to friends at school who belong to gangs and *people think I'm a gangster*, which can each relate to external perceptions of the respondent belonging to a gang, even if they

**TABLE 1. Affirmative Responses for Self-Reported Problem Behavior/Offending Items (N = 318)**

Item	Response					
	Ever in Wave 1	Ever in Wave 2	Ever in Both Waves 1 and 2	In the Past 12 Months in Wave 1	In the Past 12 Months in Wave 2	In the Past 12 Months in Both Waves 1 and 2
	Count (%)					
<i>Have you carried a gun, knife, or a weapon for protection?</i>	31 (9.7)	58 (18.2)	8 (2.5)	28 (8.8)	41 (12.9)	4 (1.3)
<i>Have you used force, threats, or a weapon to steal money or something else from someone?</i>	3 (0.9)	16 (5.0)	0	3 (0.9)	9 (2.8)	0
<i>Have you gotten into or broken into a house/building to try to steal something?</i>	6 (1.9)	5 (1.6)	0	2 (0.6)	2 (0.6)	0
<i>Have you set fire to or tried to set fire to something on purpose?</i>	3 (0.9)	2 (0.6)	0	0	0	0
<i>Have you forced anyone to engage in sexual activity with you when they did not want to?</i>	2 (0.6)	0	0	0	0	0
<i>Have you used a weapon to threaten or injure someone else?</i>	6 (1.9)	15 (4.7)	0	5 (1.6)	10 (3.1)	0
<i>Have you been involved in any gang fights?</i>	10 (3.1)	14 (4.4)	0	5 (1.6)	8 (2.5)	0

**TABLE 2. Factor Structure of the Initial Group of 22 Youth Violence Propensity Scale Items**

Items	Random sample 1 Wave 1 (n = 159)			Random sample 2 Wave 1 (n = 159)			Full Sample Wave 1 (n = 318)			
	Component/Factor									
	1	2	3	1	2	3	1	2	3	
Q1. Have any of your friends bought drugs in the past year?	-.027	<b>.810</b>	-.028	-.075	<b>.854</b>	.001	.045	<b>.849</b>	.028	Deviant Peers
Q2. I do not want to know any details but do any of your friends regularly use or sell drugs?	.109	<b>.753</b>	-.027	-.096	<b>.834</b>	.011	.011	<b>.843</b>	.057	Deviant Peers
Q3. Have any of your friends dropped out of school?	-.034	<b>.792</b>	.040	-.188	<b>.580</b>	.111	.226	<b>.853</b>	-.211	Deviant Peers
Q4. Have any of your friends been at court because of their behavior?	-.219	<b>.810</b>	.071	-.091	<b>.651</b>	.040				n/a
Q5. Have any of your friends skipped school a lot without permission?	-.074	<b>.771</b>	-.062	-.140	<b>.708</b>	.024	-.047	<b>.789</b>	-.039	Deviant Peers
Q6. Do any of your friends smoke cigarettes on a pretty regular basis?	-.084	<b>.827</b>	-.003	-.003	<b>.805</b>	-.064	-.015	<b>.854</b>	.020	Deviant Peers
Q7. Do any of your friends go out in the evening without their parents' permission?	.241	<b>.584</b>	-.032	.242	<b>.689</b>	-.143	-.109	<b>.649</b>	.375	Deviant Peers
Q8. Do any of your friends drink wine/ alcohol fairly regularly?	.030	<b>.655</b>	-.029	-.005	<b>.706</b>	-.024	-.033	<b>.783</b>	.078	Deviant Peers
Q9. I have friends who carry weapons sometimes.	.235	<b>.545</b>	.093	.366	<b>.615</b>	.140				n/a

(Continued)

**TABLE 2. Factor Structure of the Initial Group of 22 Youth Violence Propensity Scale Items (Continued)**

Items	Random sample 1 Wave 1 (n = 159)			Random sample 2 Wave 1 (n = 159)			Full Sample Wave 1 (n = 318)			
	Component/Factor									
	1	2	3	1	2	3	1	2	3	
Q10. <i>I think you are safer, and have protection, if you join a gang</i>	<b>.765</b>	-.047	.008	<b>.835</b>	-.038	-.035	.009	-.079	<b>.879</b>	Pro-Gangs
Q11. <i>I will probably join a gang</i>	<b>.806</b>	-.182	.062	<b>.690</b>	-.043	.118	.143	-.099	<b>.770</b>	Pro-Gangs
Q12. <i>Some of my friends at school belong to gangs</i>	<b>.750</b>	.075	.034	<b>.675</b>	.185	-.046	-.033	.120	<b>.809</b>	Pro-Gangs
Q13. <i>I think it's cool to be in a gang</i>	<b>.919</b>	-.093	-.010	<b>.750</b>	-.029	.094	.079	-.045	<b>.854</b>	Pro-Gangs
Q14. <i>I belong to a gang</i>	<b>.473</b>	.071	-.084	<b>.476</b>	-.101	.155	.068	.026	<b>.563</b>	Pro-gangs
Q15. <i>People think I'm a gangster</i>	<b>.561</b>	.327	-.055	<b>.648</b>	.017	-.236	-.152	.226	<b>.713</b>	Pro-Gangs
Q16. <i>It is sometimes okay for people to be discriminated against or physically harassed because of their nationality.</i>	.082	-.090	<b>.824</b>	.150	-.079	<b>.801</b>	<b>.793</b>	-.150	.245	Pro-Violence
Q17. <i>A guy shows he really loves his girlfriend if he gets in fights with other guys about her.</i>	-.074	-.060	<b>.744</b>	.059	-.056	<b>.676</b>	<b>.771</b>	-.074	.056	Pro-Violence
Q18. <i>People from other races, sometimes deserve to be discriminated against or physically harassed.</i>	.036	-.154	<b>.755</b>	.127	-.053	<b>.837</b>	<b>.823</b>	-.181	.140	Pro-Violence

(Continued)

**TABLE 2. Factor Structure of the Initial Group of 22 Youth Violence Propensity Scale Items (Continued)**

Items	Random sample 1 Wave 1 (n = 159)			Random sample 2 Wave 1 (n = 159)			Full Sample Wave 1 (n = 318)			
	Component/Factor									
	1	2	3	1	2	3	1	2	3	
<i>Q19. If people do things to make me really mad, they deserve to be beaten up.</i>	-.116	.324	<b>.689</b>	-.212	.078	<b>.799</b>	<b>.917</b>	.313	-.251	Pro-Violence
<i>Q20. It is sometimes okay for people to be discriminated against or physically harassed because of their sexual orientation.</i>	.019	-.063	<b>.812</b>	-.099	-.041	<b>.937</b>	<b>.919</b>	-.104	.012	Pro-Violence
<i>Q21. If someone disrespects me, I have to fight them to get my pride back</i>	-.012	-.007	<b>.779</b>	.065	.093	<b>.693</b>				n/a
<i>Q22. If you mess with me/my friends, you will get hurt</i>	.054	.146	<b>.684</b>	-.060	.148	<b>.637</b>	<b>.779</b>	.240	-.057	Pro-Violence
<b>Sample 1 (n = 159)</b>	<b>Sample 2 (n = 159)</b>			<b>Sample 2 (n = 159)</b>			<b>Full Sample (n = 318)</b>			
Bartlett's p < .001	$\alpha = .91$	Bartlett's p < .001		$\alpha = .87$	Bartlett's p < .001		$\alpha = .920$	Bartlett's p < .001		
KMO: .881	Omega .91	KMO: .855		Omega .85	KMO: .868		Omega .92	Omega .92		
Explained common variance 72.9% RMSR .0526	Explained common variance 72.9% RMSR .0720			Explained common variance 60.0% RMSR .0543			Explained common variance 72.85% RMSR .0543			

Note. Factor loadings > .4 are in boldface. KMO = Kaiser-Meyer-Olkin test;  $\alpha$  = Cronbach's alpha; Omega = McDonald's Omega; RMSR = root mean square of residual.

**TABLE 3. CFA Model Fit Statistics ( $N = 318$ )**

Model Description and Factor Structure	$\chi^2$	$df$	$\chi^2/df$	CFI	PCFI	RMSEA
1) 19 items, three factors (deviant peers, pro-violence, pro-gangs). No correlated error terms.	382.08	149	2.56	.85	.74	.070
2) 19 items, three factors (deviant peers, pro-violence, pro-gangs). Correlated error terms (two peer deviance pairs, 1 pro-violence pair, 1 pro-gangs pair).	272.91	145	1.88	.92	.78	.053
3) 19 items, three factors (deviant peers, pro-violence, pro-gangs, two pro-violence subfactors (hegemonic violence: four items, reactive violence: two items). Correlated error terms (two peer deviance pairs, 1 pro-gangs pair).	264.83	145	1.83	.92	.78	.051

*Note.*  $\chi^2$  = chi-squared;  $df$  = degrees of freedom; CFI = comparative fit index; PCFI = parsimony-adjusted comparative fit index; RMSEA = root mean square error of approximation.

themselves do not “endorse” gang affiliations). The wave 1 YVPS was slightly skewed ( $0.95$ ,  $SE = 0.14$ ) and kurtotic ( $1.1$ ,  $SE = 0.27$ ). The Wave 2 YVPS was both less skewed ( $0.44$ ,  $SE = 0.14$ ) and less kurtotic ( $0.19$ ,  $SE = 0.27$ ). Square root transformation resulted in more parametric distributions for scores in both waves (wave 1 skewness =  $-0.27$ , kurtosis =  $0.40$ , Shapiro–Wilk  $p$  value =  $.003$ ; wave 2 skewness =  $-0.68$ ,  $SE = 0.86$ , Shapiro–Wilk  $p$  value <  $.001$ ). There is a significant difference in mean YVPS scores between waves 1 and 2 (mean difference =  $-0.24$ ,  $p < .001$ ), demonstrating that mean scores increased from wave 1 to wave 2 for the respondents.

Scale intercorrelations and descriptive statistics are presented in Table 4. Each of the measures was significantly intercorrelated at  $p < .05$  or greater, with a maximum of  $r = .53$

**TABLE 4. Descriptives and Intercorrelations (Pearson’s Product-Moment) Time 2**

Scale Component	1	2	3	Possible Range	$M$	$SD$	$\alpha$	Omega
1. Deviant peers				0–3	0.78	0.68	.93	.93
2. Pro-gangs	.37***			0–3	0.67	0.49	.89	.89
3. Pro-violence	.13*	.53***		0–3	0.77	0.42	.93	.93
5. Total YVPS	.77***	.81***	.65***	0–9	2.22	1.19	.92	.91

*Note.*  $N = 318$ . \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ , two-tailed.  $SD$  = standard deviation.



**TABLE 5. Correlations Between Other Risk Measures and YVPS Components, Time 2**

<i>Risk Measure</i> (Range, Mean, Standard Deviation)	Deviant Peers	Pro-Gangs	Pro-Violence	Total YVPS
Problem conduct past 12 months (range: 0–28, <i>M</i> = 0.43, <i>SD</i> = 1.28)	.43***	.38***	.23***	.48***
Problem conduct past 24 months (range: 0–56, <i>M</i> = 0.77, <i>SD</i> = 1.77)	.39***	.32***	.16**	.42***
Victimization past 12 months (range 0–8, <i>M</i> = 1.64, <i>SD</i> = 1.46)	.37***	.36***	.29***	.46***
Maternal risk assessment (range 1–5, <i>M</i> = 2.08, <i>SD</i> = 0.68, $\alpha$ = .75)	.33***	.29***	.24***	.39***
Combined substance use (range: 0–23, <i>M</i> = 0.94, <i>SD</i> = 1.82)	.58***	.31***	.20***	.53***

Note. *SD* = standard deviation; *N* = 318.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ , two-tailed.

between pro-gangs and pro-violence, supporting both convergent and discriminant validity and an absence of multicollinearity.

### Concurrent and External Validity

To test the independent association of YVPS subscales and the combined YVPS with other contemporaneous risk measures, self-reported problem conduct, and the exogenous assessment of the participant's risky behavior from their primary maternal caregiver, bivariate (Pearson product-moment) correlations are presented in Table 5. Significant positive correlations (at  $p < .01$  or greater) among all YVPS items and additional risk measures are seen. Importantly, the independent Maternal Risk Assessment is significantly correlated with each YVPS item, adding support for external validity. Furthermore, the correlations between the combined YVPS and other risk measures are, in most instances, higher than correlations for the YVPS subscale measures, supporting the breadth of construct validity for the combined YVPS score (the sole exception is between Substance Use and Deviant Peers,  $r = .58$  vs.  $r = .53$  with the combined YVPS). These findings are important to demonstrate concurrent validity and triangulation with actual (participant disclosed) reports of problem conduct and substance use/potential abuse and the sole exogenous indicator, the maternal risk assessment.

### Predictive Validity of the YVPS

In terms of predictive validity, there is some evidence that the wave 1 YVPS and its components are correlated with future measures and self-reported behavioral outcomes (Table 6). In particular, the total YVPS score wave 1 (after square root transformation) is significantly correlated with self-reported victimization ( $p < .001$ ) and substance use/abuse ( $p < .01$ ) as measured in the following wave, 12 months later. There are additional significant correlations between the YVPS wave 1 and the deviant peers YVPS subscale

**TABLE 6. Pearson's Correlations Between YVPS Time 1 Components and Risk Measures Time 2**

Time 2 Measures	Deviant Peers Time 1	Pro-Gangs Time 1	Pro-Violence Time 1	YVPS (Square Root) Time 1
<i>Incidence–Problem Conduct past 12 months</i>	.003	–.05	–.005	–.01
<i>Victimization past 12 months</i>	.22***	.17**	.01	.18**
<i>Maternal risk assessment</i>	.07	.16**	.02	.09
<i>Substance use</i>	.18**	.10	.07	.18**
<i>Deviant peers time2</i>	.23***	.10	.004	.17**
<i>Pro-gangs time2</i>	.03	.12*	.11	.10
<i>Pro-violence time2</i>	.01	.11*	.11*	.10
<i>YVPS time2 (sq. root)</i>	.16**	.16**	.09	.19**

Note.  $N = 318$ . \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ , two-tailed.

wave 2 ( $p < .001$ ) and the total YVPS ( $p < .01$ ) in wave 2. As mentioned previously, wave 1 data suffered from lower internal consistency across most measures as well as lower levels of self-reported socially undesirable behaviors (such as violence, criminality, and drug use), partially attributable to fieldwork inconsistencies. It is possible that a further wave of data, with consistent field work, would yield stronger longitudinal correlations, including through multivariate modeling.

A strong linear relationship was observed between age and the YVPS (square root transformed): in wave 1,  $r = .20$ ,  $p < .001$ ; in wave 2,  $r = .31$ ,  $p < .001$ . For comparison purposes, three age groups were established: 12- to 15-year-olds ( $n = 65$ ,  $M = 14.3$ ,  $SD = 0.82$ ), 16- to 18-year-olds ( $n = 132$ ,  $M = 16.9$ ,  $SD = 0.83$ ), and 19- to 24-year-olds ( $n = 121$ ,  $M = 20.5$ ,  $SD = 1.4$ ). In analysis of variance, there was a significant age group difference in the YVPS wave 1 (square root transformed) measure,  $F(2, 315) = 15.4$ ,  $p < .001$ . There was also a significant linear trend,  $F(1, 315) = 26.82$ ,  $p < .001$  (weighted), indicating that the YVPS wave 1 increased with age. In post-hoc testing (Hochberg's GT2), significant group differences were observed between both the youngest and oldest groups (mean difference  $-0.30$ ,  $p < .001$ ) and the middle and oldest groups (mean difference  $-0.25$ ,  $p < .001$ ). In wave 2, there was a significant age group difference in the YVPS wave 2 (square root transformed) measure,  $F(2, 315) = 6.79$ ,  $p < .01$ . There was also a significant linear trend,  $F(1, 315) = 13.56$ ,  $p < .001$  (weighted), indicating that the YVPS wave 2 also increased with age. In post-hoc testing (Hochberg's GT2), significant group differences were observed between the youngest and oldest groups only (mean difference  $-0.25$ ,  $p < .01$ ). This suggests that there is increasing risk with age, both between waves as respondents age within their group and across the age groups, although such increases may begin tapering in the mid-20s as many young men "age out" of criminality, according to classic age-crime curves (Moffitt, 1993).

## DISCUSSION

The Youth Violence Propensity Scale was developed with three sub-scales, a Deviant Peers/Criminal Associates subscale, a Positive Attitude Toward Gang Associations subscale, and a Positive Attitude Toward Violence subscale. EFA with two random samples of wave 2 data revealed a three-factor structure with adequate factor loadings for all items. CFA with a separate wave 1 sample confirmed the presence of a 19-item three-factor solution. Fit statistics demonstrated that the best fitting model included a four-item hegemonic violence subscale and a two-item reactive violence subscale within the Pro-Violence factor, aligned with the subscale properties of violent attitude measures tested in other studies (Funk et al., 1999; Walker, 2005). The YVPS exhibited better distribution characteristics (skewness and kurtosis) than the self-reported Problem Conduct indices tested in this study.

The YVPS also showed stability across waves with a modestly significant correlation ( $r = .17, p = .003$ ). The YVPS scores were highly correlated with (admittedly limited) self-reported problem conduct, substance use/abuse, and the maternal risk assessment in concurrent, cross-sectional analysis. The wave 1 YVPS was not significantly correlated with future self-reported problem conduct, as measured 12 months later. The inconsistencies with these self-reports, both as seen in this study (see Table 1) and in other large-scale nationally representative studies in South Africa (Leoschut, 2009; Reddy et al., 2003, 2010), may limit any findings of predictive efficacy of the YVPS. Further studies could explore the predictive validity of the YVPS in greater detail.

The wave 1 YVPS was also correlated with subsequent victimization in wave 2 ( $r = .18, p < .01$ ), substance use/abuse in wave 2 ( $r = .18, p < .01$ ), and the YVPS Deviant Peers subscale in wave 2 ( $r = .17, p < .01$ ). The relationship between the wave 1 measurement of the YVPS and self-reported substance use/abuse as measured 12 months later delineates a potential pathway between earlier aggression, deviant peer associations and violence-supporting attitudes, and subsequent high-risk behavior (more frequent use of drugs and alcohol). In their longitudinal latent growth curve analysis, Farrell, Sullivan, Esposito, Meyer, and Valois (2005) also found evidence that early aggression predicted a subsequent increase in drug use. Further longitudinal study could help to ascertain if increased substance use is predictive of future violent offending.

Across the extant literature, there are few youth violence risk (and risk change) assessment tools that have been developed (Fazel, Singh, Doll, & Grann, 2012; Funk et al., 1999; Grinberg et al., 2004; Walker, 2005; Yang et al., 2010), and none known to the author that have been tested using CFA and longitudinal data.

The findings of this study suggest that violence potential can be successfully measured in the South African context, and appropriate interventions could be targeted to address critical areas such as parenting deficits, early deviant peer associations, the harms of substance use, and the benefits of maintaining a high attachment to schooling. It is believed that a tool such as the YVPS could serve to strengthen the connection between research and practice within the domain of youth violence in South Africa and beyond.

## Limitations

The relatively small sample size, together with the broad age range, present both statistical (power) and theoretical (differential meaning) limitations to this study. Ideally, the YVPS would be tested with other samples, including among female participants, and in other contexts. It is possible that the YVPS is tapping into a more age-restricted potential for violence

engagement than the breadth of this sample. While there was a general tendency for YVPS scores and self-reported problem behavior/offending to increase with age, further research could explore the predictive efficacy of the scale among younger respondents, to ideally pinpoint risk and target treatment before the onset of violent offending.

Face-to-face interview methods may have influenced the level and consistency of disclosure of sensitive information. Although evidence on the efficacy of self-completed and technology-aided interview techniques remains mixed in developing country contexts where literacy rates may be low (Potdar & Koenig, 2005), it is possible that such techniques could yield more disclosure.

Longitudinal modeling of future violence, or violence potential, is a challenging endeavor. Even large-scale longitudinal studies have yielded results that sometimes contradict theory, such as the influence of deviant peers on violent behavior (Hall, Simon, Lee, & Mercy, 2012). The relatively short duration of this study may not be sufficient to establish the antecedents of violent behavior and to pinpoint its onset and desistance. In this study, outcome measures were limited to self-reports from the study participant and the one exogenous measure, the Maternal Caregiver Assessment. Ideally, a prospective study of violence, or violence potential, as an outcome, would incorporate additional measures of triangulation and additional measurement waves in order to pinpoint the actual onset, incidence, intensity, duration, and desistance of violent behavior. While aggression, as a potential precursor for violent offending, could, theoretically, be observed at school or in the context of group programming/intervention, violent offending, illicit and covert by its very nature, cannot be easily observed. Thus, there is still need for further research utilizing the YVPS in the prediction of violent outcomes and changes in violence risk with longitudinal data.

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## APPENDIX

**Factor Analysis—Maternal Risk Assessment of Child’s Dangerous Behavior**

## Questionnaire Item

“How often do the following attributes describe your son...”

(Response Options: 5 = Almost Always, 4 = Often, 3 = Sometimes, 2 = Seldom, 1 = Never)

	Factor Loading
<i>Is considerate of other people’s feelings?</i> (reverse coded)	<b>.77</b>
<i>Is generally obedient, usually does what you request?</i> (reverse coded)	<b>.86</b>
<i>Has a hot temper?</i>	<b>.46</b>
<i>Is very moody and easily upset?</i>	<b>.49</b>
<i>Fights with his siblings or other members of the household?</i>	<b>.70</b>
<i>Gets into trouble at school, work and/or in the community?</i>	<b>.55</b>
<i>How often do you fight with your son about what he does when he is out (not at home)?</i>	<b>.64</b>
<i>How often do you fight with your son about what time he comes home when he has been out?</i>	<b>.73</b>
<i>How often do you fight with your son about having bad or dangerous friends?</i>	<b>.60</b>

Bartlett’s =  $p < .001$ . KMO = .756  $\alpha = .86$ . McDonald’s Omega = .86. Explained common variance 54.4%

RMSR = .0551.

*Note.* N = 289 (29 cases with missing data were dropped from analysis). Factor loadings > .4 in boldface. KMO = Kaiser–Meyer–Olkin test.  $\alpha$  = Cronbach’  $\alpha$ . RMSR = root mean square of residual.