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The Kingston YMCA Youth Development Programme:

Impact on Violence Among At-Risk Youth in Jamaica

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Abstract

We present data on aggression-related outcomes for participants in the Kingston YMCA Youth Development Programme. This program is designed to provide at-risk, low-income males ages 14-17 in urban Kingston, Jamaica with intensive remedial education, social skills training, and personal development over three to four years. Two samples of youth were included: (a) 180 males, 125 of whom were currently enrolled in the program for at least six months and 55 of whom were in a wait-list control group; (b) 117 males, including 56 program graduates and a matched sample of 60 community controls. For the currently enrolled sample, significant reductions in aggressive behavior were found after controlling for aggressive propensity. For the graduate sample, significant reductions in aggressive propensity and aggressive behavior were found. The findings are discussed in terms of the potential of programs developed by youth service agencies for extremely disadvantaged youth to have short-term and long-term benefits for youth most at-risk, the importance of considering propensity for aggression as a viable program outcome, and support for the notion that it is "never too late" to help youth succeed.

The Kingston YMCA Youth Development Programme:

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> While we are celebrating Usain Bolt, Asafa Powell, Shelly-Ann Fraser and Kerron Stewart's performance in Berlin (Olympic Track and Field Athletes), we at the Kingston YMCA are pleased to share that 28 students in our Youth Development Programme (formerly the Street Corner Boys Programme) who sat the 2009 Grade 9 Achievement Test, set by the Ministry of Education, were successful and have all been placed in high schools. Congratulations to the students and their teachers. We consider this a remarkable success as these students were being taught under extreme difficulties that resulted from the different factors that affected them and the communities within which they reside.
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> *Sarah Newland-Martin, O. D., J. P. (Mrs.),*
> *Administrator/General Secretary Kingston YMCA, August 2009*

Aggression and violence are multiply-determined behaviors that are learned over time and across contexts as children grow up (Eron, 1987). Empirical studies from several disciplines have emphasized the unique contribution of particular risk factors, including factors intrinsic to the individual such as personality, temperament, genetics, neuropsychological functioning, and biological predispositions, as well as contextual or environmental factors such as peer influences, family socialization, parenting practices, and community disadvantage (for a comprehensive review, see Guerra & Leidy, 2008). Recent ecological perspectives and related prevention efforts have recognized the complexity of these risk factors and how they co-occur, interact, and transact over the course of development (Dodge & Pettit,, 2003; Guerra & Huesmann, 2004). To the extent that individual propensity for aggression is exacerbated by characteristics of proximal and distal environmental contexts that support the cumulative learning and maintenance of aggression over time, it becomes increasingly difficult to prevent or mitigate (Farrington, 1991; Tolan, Guerra, & Kendall, 1995).

Indeed, prevention efforts in the U.S. have been shown to have differentiated effects on children of different ages and in different environments. For example, the Metropolitan Area Child Study tested the effect on aggression of a multi-component, multi-context program for younger (ages 7-8) and older (ages 11-12) elementary school children growing up in low and moderate resource urban communities in a large midwestern city. Even when the intervention included teachers, peers, and families, preventive effects on aggression were only found for younger children living in the moderate resource communities (Metropolitan Area Child Study, 2002). These findings were consistent with other studies suggesting that the difficult conditions in low resource, inner-city communities may simply overwhelm the effects of psycho-educational programs designed to build individual skills and competencies, particularly as children get older (e.g., Greenberg et al., 2003; Weissberg , Caplan, & Harwood, 1991).

In developing countries such as Jamaica, harsh conditions and extreme environments present even greater challenges for preventing aggression and violence. Children and youth often face familial, social, and environmental challenges that seriously impede their development. Under some circumstances these conditions can render aggression and violence more adaptive, particularly for young males. For example, violence can be effective in co-opting the resources of others, deterring rivals from future aggression, achieving power and status, and inflicting costs on same-sex rivals (Buss & Shackelford, 1997).

Although anecdotal stories and testimonials can be compelling, there is a pressing need for systematic research on program impact for these types of intensive efforts on youth violence prevention in Jamaica and throughout the developing world (Buvinic,

Morrision, & Shifter, 1999). Not only can this research help inform policy and practice regionally and globally, it also can add to our understanding of the learning and prevention of aggression under conditions of extreme and concentrated community disadvantage.

The present study reports findings from an evaluation of a youth development and violence prevention program for at-risk inner-city adolescents from urban (Kingston) Jamaica. The Kingston YMCA Youth Development Programme engages at-risk adolescent boys (ages 14-16) who are not attending school because of academic or social problems, typically aggressive and defiant behavior. Participants attend the program daily (in lieu of regular school) until they have attained proficiency on the Grade 9 Achievement Test and are returned to regular schools. The typical length of program participation is four years, although some youth reach the program goals before four years and others continue for a longer time (sometimes briefly cycling out of the program over this time period because of personal or economic constraints). They receive comprehensive services including remedial education, vocational training, social/life skills instruction, recreation, and positive behavior management. Prior to the present study, there have been no empirical studies of program outcomes.

Youth and Violence in Jamaica

The high level of violence in disadvantaged communities is a pressing concern of the Government of Jamaica, civil society, and the international community for several decades (Blank, 2001; Moser & Holland, 1999). Rapidly increasing rates of violence and crime compromise the health and well-being of Jamaican children and youth. Juxtaposed against images of beautiful beaches and luxury resorts, the Caribbean has one of the

highest homicide rates in the world, and Jamaica has the highest homicide rate in the Caribbean, with rates at approximately 140 per 100,000 in the poorest inner-city communities of Kingston, the capital city (Jamaica Constabulatory Force, 2009). The problem is so extreme in some inner-city communities that residents have named them after war zones or areas associated with violence such as “Gaza” and “Tel Aviv” (Harriott, 2008).

There is little empirical research on the causes of violence among Jamaican youth. The available studies suggest that the risk factors are quite similar to those identified with U.S. samples, albeit more severe in magnitude. For example, looking at individual-level risk in Jamaican samples, more aggressive boys have been shown to be more likely than their pro-social counterparts to have lower scores on indices of achievement, greater endorsement of aggressive responses in hypothetical situations, and higher levels approval of aggression (Meeks-Gardner, Powell, & Grantham-McGregor, 2000; 2007).

Looking at characteristics of families, harsh parenting, which also has been implicated in risk for aggression, is commonplace, particularly in poor urban areas and in female-headed households (Fernald & Meeks-Gardener, 2003). Whether it is a result of the brutal history of slavery or religious beliefs based on a literal interpretation of the Bible, physical punishment often is considered a form of “love” with direct reference to the Book of Proverbs (Steely & Rohner, 2006). Socially and legally sanctioned forms of discipline in homes and schools include striking children with hands, sticks, belts, switches, wood, wire or other objects, or sitting in uncomfortable positions for extended lengths of time (Meeks-Gardner et al., 2007). Children are punished in this way for any

number of transgressions, including lying, stealing, impoliteness, poor schoolwork, crying too much, not finishing a meal, and not completing their chores (Barrow, 1996).

At the community level, high rates of neighborhood violence virtually guarantee that most youth will be exposed to some type of violence before they reach adulthood (Gayle & Levy, 2007; Moser & Holland, 1999; Meeks-Gardner et al., 2007). For instance, Fernald and Meeks-Gardner (2003) reported that among 8 to 10 year olds in poor urban areas of Kingston, 91% mentioned some type of violence exposure in their schools and communities. Further, children growing up in these communities often struggle to feel respected and included in the social order, with secondary schools unable to accommodate all youth, few job training or employment opportunities, and a general marginalization of ghetto residents within the larger Jamaican society (Blank, 2001; Planning Institute of Jamaica, 2007).

This problem is particularly acute for inner-city male teenagers who are overrepresented among perpetrators of serious criminal violence in Jamaica (consistent with patterns in most developing and developed countries). These youth often are struggling to establish their identity in the face of limited legitimate social and economic opportunities. Violence can become a self-help strategy for gaining respect and accessing economic and social resources—adolescent males are overrepresented among perpetrators of serious criminal violence in Jamaica. As Gray (2004, p. 106) notes, “The role of the street and the yard as powerful identity-creating platforms was strengthened in a country in which both law and society offered few protections and meager affirmations of the black poor’s right to respect.” Among young males, readily available guns bring an additional level of economic gain when used as tools for committing crimes (Harriott,

2008). Guns also serve to impress girls, noted in the popular saying "No gun, no girl" (Moser & Holland, 1999). Violent images are reinforced through popular youth culture, including venues such as dancehall reggae that often condone violence or incite conflict between groups loyal to different artists (Stolzoff, 2000). Criminal opportunities often are associated with drug trafficking and the informal power structure of the "dons" or leaders of major criminal operations within communities and districts (Harriott, 2008).

It is evident that the ecological conditions linked to aggression and violence in Jamaica are clearly quite severe. These conditions present significant challenges for preventive interventions that target those most at-risk, and suggest that only the most comprehensive and intensive programs may be able to counteract the enduring and severe contextual influences within inner-city communities. The challenge is even greater when working with teenagers, who have developed more stable patterns of behavior and who struggle to find their own identity and place in society in a context of limited opportunities and access to resources.

The Current Study

The purpose of the current study was to evaluate the impact on aggression-related cognitions and aggressive behavior of an intensive, holistic youth development and prevention program for young at-risk males from Kingston, Jamaica. The Kingston YMCA Youth Development Programme was developed specifically to promote the values and behaviors associated with YMCA principles: love, peace, service, and justice. The program is designed for at-risk youth growing up in the most disadvantaged urban communities in the Kingston Metropolitan Area who were already behind or not participating in formal schooling. The specific goals of the program are to: educate,

socialize, feed, reinstate in the educational system, maximize opportunities for employment, and achieve a passing score on the Grade 9 achievement test (required for entrance into high school equivalent). The intervention provides daily supervision (from 9:00 am to 4:00 pm), instruction, and socialization for participants. Remedial education is provided in small classes (average 20 youth per teacher). Although there are no specific social skills curricula used, the program relies heavily on counseling, guidance, authoritative discipline (emphasizing rewards for positive behavior) and providing positive male and female role models. The average length of participation is four years, although some youth complete the program sooner and others stay longer until they pass their Grade 9 achievement test and can be re-integrated into schools.

We present results from a post-hoc analyses on propensity for aggression and aggressive behavior for two samples: (a) youth attending the program for at least six months compared to wait-list controls; and (b) youth who had completed and graduated from the program during the previous five years compared to a matched community sample. We hypothesized that current participants and program graduates would be less likely to endorse the use of aggression and report less aggressive behavior than matched controls.

Method

Overview

The data utilized in the present study were collected during 2007-2008 as part of an evaluation to determine the impact of individual-level youth violence prevention programs in urban Jamaica sponsored by The World Bank. A research team from the University of the West Indies (Mona, Jamaica) collected all data. The Institutional

Review Board of that University approved the study and data collection procedures. We report post-test survey data from two samples of adolescent males: (a) current participants in the YMCA intervention and wait-list controls (labeled the YMCA enrolled and wait-list control sample); (b) and previous graduates and a matched control sample (labeled the YMCA graduate and community control sample).

Participants

YMCA enrolled and wait-list control sample. All boys who had participated in the YMCA intervention for at least six months and who were expected to continue were invited to participate in the survey data collection. Based on these guidelines, 149 potential participants were identified. With the assistance of the Program Director, the research team explained the survey procedure and provided parent consent and youth assent forms to all boys. They were asked to take the forms home to their parents or guardians to sign if they and their parents agreed that they would like to participate. Of the 149 boys initially recruited, 125 boys (84%) consented and were interviewed. The 24 boys who were not interviewed had either left or had been expelled from the program (12 boys), had severe developmental delays that precluded participation (4 boys), or did not receive parental consent (8 boys). For the waitlist control group, the research team collected the names and contact details for boys waiting to attend the YMCA intervention. The research team was able to locate and receive permission from a total of 55 boys who were actively waiting to participate in the YMCA intervention (from a total of 63 boys on the waitlist). Thus, data were collected from 180 boys from the intervention and wait-list control groups. The total YMCA enrolled and wait-list control sample ranged in age from 12-17 years, and were from poor, urban communities.

Approximately 38% of the sample did not have access to indoor plumbing (own inside flush toilet) or piped water (own inside pipe), with the remaining participants reporting shared inside or outside facilities. Approximately 82% of the sample resided with their mother or grandmother only.

YMCA graduate and community control sample. All boys who had graduated from the YMCA intervention within the previous five years (meaning they had passed their Grade 9 achievement test and been reintegrated into high school), and for whom contact information was available were considered to be eligible for the graduate sample. From this list, youth were randomly selected and invited to participate until a total sample of 60 youth was achieved. Eligible youth were contacted by the research team, the study procedures were explained, and parental permission (for youth under age 18)/youth assent were solicited. Although 60 youth were contacted, only 56 youth actually participated in the data collection. To establish an equivalent community control sample that had not participated in an intensive intervention program during the adolescent years, we worked with a community agency for street youth to identify eligible male participants. The agency was asked to identify youth from the same age group, community socioeconomic background, and risk status (previously dropped out of school, etc.). We were able to identify, secure permission, and collect data on a comparable sample of 60 community control youth. Thus, data were collected from 116 boys from the intervention and community control groups. The total YMCA graduate and community control sample ranged in age from 13-27 years, and were from poor, urban communities. Approximately 43% of the sample did not have access to indoor plumbing (own inside flush toilet) or piped water (own inside pipe), with the remaining participants

reporting shared inside or outside facilities. Approximately 71% of the sample resided with their mother or grandmother only.

Equivalence between intervention and control groups for both samples. To determine whether the YMCA intervention and control groups were equivalent on key demographic variables, we conducted a logistic regression estimating the effects of economic and family covariates on the likelihood of being in the intervention or control group for both samples. Results are presented in Table 1. The only significant difference between the groups was reported for indoor plumbing within the YMCA graduate and community control sample. To adjust for this difference, indoor plumbing, as a proxy for relatively better economic conditions, was included as a covariate in the analyses for the graduate and community control sample.

Data Collection Procedures

All participants were interviewed individually by one of six interviewers from the research team. The interviewer read each question aloud and wrote the respondent's answer on the questionnaire. Interviews were conducted in a quiet room at the YMCA or in the participants' homes (for those who were unable to travel to the YMCA). Individual administration of the questionnaires (as opposed to self-completed questionnaires) was used to control for difficulties with reading and understanding the questions. Before beginning each interview, the researchers checked the returned consent forms. The field coordinator for the research team observed approximately 6% of the interviews to ensure that the materials were presented correctly, item wording was followed, probes were used properly, and participants' questions were handled appropriately. Inter-rater reliability was established by having the field coordinator also record answers during the

observational sessions; agreement was between 98-100%. The project staff met weekly to review and correct any concerns or difficulties. The questionnaire had been piloted prior to administration to ensure that the items were culturally appropriate and easily understood by participants. No difficulties in the survey administration were noted.

Measures

Aggressive behavior and aggressive propensity were assessed using sub-scales from the *Jamaica Youth Survey*, a 107-item, self-report survey that includes measures of aggression and related beliefs, core competencies, and demographic background data. All scales from this measure were adapted from previously validated scales and were refined and modified to be culturally appropriate for Jamaican youth via focus groups and pilot testing (Meeks-Gardner, Williams, Guerra, & Walker, 2009). A unique feature of the assessment of aggression was the inclusion of both reporting of previous aggressive behavior *and* endorsement of future intent to use aggression (aggressive propensity). The psychometric properties of these sub-scales used in the present study (internal consistency and dimensionality) are discussed below.

Self-reported aggressive behavior. The *Jamaican Youth Survey* included several items pertaining to various forms of aggressive behavior. Some of the items reflected verbal aggression (e.g., saying mean things about someone to make others laugh), and other items reflected bullying (e.g., shaming or embarrassing someone to their face) and social exclusion (e.g., not letting someone be a part of your group anymore because you were upset or angry). However, the focus of the present study was on more serious forms of physical aggression and violence. Five relevant items, therefore, were selected from the array of aggressive behaviors listed in the questionnaire, including shoved or pushed,

threatened to hit or physically harm, been in a fight in which you hit someone, thrown something at someone to hurt them, and hit or slapped someone. Respondents could select one of four response categories for each item: never (1), once or twice (2), three-to-five times (3), and six times or more (4).

An average score was calculated by summing across and dividing by the total number of items; hence, high scorers were self-reporting a high frequency and low scorers a low frequency of these aggressive behaviors. Alpha coefficients were calculated to determine the internal consistency (reliability) of this measure, and its dimensionality was determined by conducting a principal components factor analysis with oblique rotation (Hamilton, 1992). Table 2 shows results of these analyses. All items loaded on a single factor for both samples, and the loading were both strong and similar across the two samples. Internal consistency was good, with alpha coefficients of .74 for the YMCA enrolled/wait-list control and .72 for the YMCA graduate/community control sample.

Aggressive propensity. The *Jamaica Youth Survey* also included an abbreviated version of the "what would make you fight?" scale to measure the propensity for youth to engage in aggressive behavior. This scale has been developed and validated by the Academic Centers of Excellence (ACE) Cross-site Analytical Tools Working Group (Chan & Henry, 2009). The underlying logic of this measure is that youth will vary in their threshold for aggression, meaning some will resort to physical aggressive behavior with less provocation than others. The rating scale measures this variability. Male respondents were asked whether they would "hit or fight with a male if" he engaged in seven different provocative behaviors, specifically, he hit you first, he shouted at you or called you names, he spread rumors and lies about you behind your back, he took

something of yours without asking you, he said something bad about a member of your family, you were angry or in a bad mood, and you wanted to get revenge. Four response categories were provided: “never” (1), “I might” (2), “I probably would” (3), and “yes, for sure” (4). Summing across and dividing by the number of items calculated an average score. High scorers are expressing a greater propensity for aggression than low scorers.

As with the self-reported aggressive behavior measure, alpha coefficients were calculated to determine the internal consistency of the “what would make you fight scale,” and its dimensionality was determined by conducting a principal components factor analysis with oblique rotation (Hamilton, 1992). Table 3 displays the results of these analyses. Notice that for both samples, all items loaded on a single factor, with loadings ranging from a low of .545 to a high of .718. An item-by-item comparison suggested that these loadings are similar across the two samples. Further, the scale had acceptable internal consistency in both samples, as indicated by the alpha coefficients that ranged between .75 and .80.

Program Exposure

To test the impact of the YMCA program on current participants (enrolled sample) and graduates of the program (graduate sample), an exposure measure was constructed. This was done by assigning a score of zero to wait-list controls in the enrolled sample and community controls in the graduate sample. Daily attendance data for participants was not available; hence, a proxy for exposure for participants was constructed based on time in program. Among those who were program participants, three categories of “time in the program” or exposure were created. The enrolled sample did not have as much detail on exposure as the graduate sample; however, all but four of

the youth in the enrolled sample had been enrolled continuously. Thus, for the enrolled sample, program exposure is roughly equivalent to program dosage. Three categories were readily apparent – those who started the YMCA program 2008-09, 2007, or 2000-06. These categories were scored one, two, and three, respectively, on the program exposure measure for the currently enrolled sample. Exposure in the graduate sample had a wide temporal range, extending from 5 to 81 months. To make the program exposure measure comparable between the two samples, the community control group was assigned a score of zero, and the range of exposure to the YMCA program among graduates was subdivided into three categories – 5 to 21 months, 22 to 44 months, and 45 to 81 months. No cases were found between 33 and 45 months. Like the enrolled sample, these categories were score one, two, and three, respectively, denoting the time spent in the YMCA program before graduation. The cut scores and distribution of cases across the scoring categories of the program exposure measure are displayed in Table 4. As mentioned previously, the length of time in program typically was three to four years (36 to 48 months); however, some youth required a longer time to complete their academic goals and/or cycled out of the program briefly due to individual circumstances (financial problems, outbreak of crime in the community), resulting in a longer overall time from program start to program completion.

Results

Analysis Plan

The overall objective of the analysis was to determine whether participation in the YMCA program, particularly program exposure, reduced involvement in aggressive propensity and aggressive behavior. Addressing this objective with the enrolled sample

allows the determination of immediate program impact. Addressing this objective with the graduate sample permits the determination of longer-term or persistent program impact, in addition to the possibility that program impact emerges once male youth graduate and use these learned skills in everyday life situations (i.e., sleeper effects).

The advantage of using the program exposure measure is that it allows for more than a simple test for the significance of the difference of mean scores between enrolled or graduated program participants and their respective control groups. Rather, time in the program from none (control group) to a lot as an indicator of exposure can be included in Ordinary Least Squares (OLS) Regression equations, with the estimated effect being the empirical representation of program impact. Accordingly, three sets of OLS regression analyses were conducted. The initial analysis estimated the effect of program exposure on aggressive propensity (Table 5), followed by the estimation of the effect of program exposure on aggressive behavior (Table 6). The final set of analyses estimated the effect of program exposure on aggressive behavior, controlling for aggressive propensity (Table 7). Because the plumbing variable (percent of the male youth having sole use of indoor water and toilet facilities, as a proxy for economic well-being) significantly differentiated the community control group from graduates of the YMCA program (see Table 1), that variable was included as a covariate in all OLS regression equations estimated for the graduate sample.

The central empirical question addressed was whether program exposure not only reduced aggressive propensity, but whether it also reduced the likelihood that youth would act on that propensity. In other words, given the level of aggressive propensity that may persist among male youth either in the program or graduates of the program, are they

more likely to refrain from aggressive behavior regardless of their propensity to use aggression?

OLS Regression Analyses

The results of the OLS regression analysis for program impact on aggressive propensity are presented in Table 5. Although the estimated effect was statistically insignificant, the empirical relation between program exposure and the "What would make you fight scale" was positive in direction for the enrolled sample, contrary to expectations. However, the estimated effect of program exposure on this measure of aggressive propensity was statistically significant and negative in direction for the graduate sample, consistent with expectations. Moreover, this estimated effect held, controlling for plumbing facilities, which also was statistically significant and negative in direction.

Table 6 displays the OLS regression results for the analysis involving self-reported aggressive behavior. The estimated effect of program exposure for the enrolled sample in this case was negative direction as expected, but it again was statically insignificant. Program exposure for the graduated sample had a negative, statistically significant, and relatively strong estimated effect on self-reported aggression. Once again, this empirical relation was sustained when plumbing facilities was statistically controlled.

Recall the last set of OLS regression analysis was designed to garner any evidence that program exposure reduces self-reported aggressive behavior independent of aggressive propensity. To look at connections among these variables, both the "what would make you fight scale" and program exposure were included in the equations estimate, along with plumbing facilities for the graduate sample. The results of this OLS

regression analysis are shown in Table 7. Two key findings can be seen in that table. First, the estimated effect of the what would make you fight scale on self-reported physical aggression is statistically significant and strong in magnitude for the enrolled sample, more so than the graduate sample, suggesting the propensity for aggression and self-reported aggression were more tightly interconnected in the enrolled, compared to the graduate sample. Second, unlike the findings in Table 6, the estimated effect of program exposure on such aggressive behavior became statistically significant, although relatively moderate in magnitude, and that estimated effect became statistically insignificant for the graduate sample, as did the estimated effect of plumbing facilities.

The results of OLS regression analyses reported in Table 7 are graphically summarized in Figures 1 and 2. These figures show the estimated slopes of the empirical relations between program exposure and the self-reported aggressive behavior, drawn from the results in Table 7. Specifically, the estimated effects were used to generate predicted values for such behavior, and those predicted values were plotted against variation in the covariates in the equations estimated – the measure of aggressive propensity and program exposure. For example, Figure 1 shows the estimated slopes for the empirical relations between the measure of aggressive propensity and self-reported aggression as well as between such behavior and program exposure for the enrolled sample. The predicted values for the relation between program exposure and aggressive behavior were produced by setting the "What would make you fight scale" at its mean and using the estimated effects reported in Table 7, along with the intercept to generate predicted values. Those values were then plotted against the variation in the program

exposure variable. The same procedure was followed for the "what would make you fight" scale, although in this case, program exposure was set at its mean.

Figure 1 shows a fairly sharp increase in the empirical relation between aggressive propensity and the predicted values of aggressive behavior and a more modest decline in the empirical relation between program exposure and predicted incidence of physical aggression. Figure 2 graphically summarizes the findings in Table 7 for the graduate sample. It too shows a fairly sharp increase in the empirical relation between the measure of aggressive propensity and predicted aggressive behavior, although not quit as sharp as in the enrolled sample. Figure 2 also shows a modest decline in empirical relation between predicted physical aggression and program exposure. A notable feature of these two figures is that the slopes for the "What would make you fight scale" and program exposure are quite similar, comparing the enrolled and graduate samples.

To determine if these estimated effects were similar or different, both samples were combined (stacked), and a dummy variable was created for "sample," with the enrolled sample scored one and the graduate sample scored zero. This dummy variable was then used to calculate interaction terms, which were the cross-product between this variable and the what would make you fight scale, in addition to the cross-product between the sample dummy and program exposure. These interaction terms were added to the equation estimated for the results reported in Table 7, along with the sample dummy. No statistically significant evidence of interaction was found for either the "What would make you fight" scale (b = .164, se = .119, t-value = 1.38, p = .168, Beta = .294) or program exposure (b = -.011, se = .235, t-value = -.16, p = .870, Beta = -.018), suggesting the estimated effects were essentially the same between the two samples.

Discussion

Our findings provide support for the effectiveness of the YMCA Youth Development Programme in preventing propensity for aggression and aggressive behavior over time. For the currently enrolled sample, significant reductions in aggressive behavior were found after controlling for aggressive propensity. For the graduate sample, significant reductions in aggressive propensity and aggressive behavior were found several years after program completion. These findings are particularly striking given that the participants were well into their adolescent years, had fallen behind in school, and were from extremely disadvantaged communities in a developing country with few legitimate opportunities for positive engagement for these marginalized youth.

Of course, our findings would have been strengthened by the use of pre-test/post-test comparisons and random assignment to treatment or control groups. However, in the real world, and particularly in developing countries, these opportunities are few. At this juncture, we consider these findings as preliminary evidence of effectiveness for positive youth development and violence prevention programs even under the most difficult community conditions. We discuss our results in terms of the potential of programs developed by youth service agencies for extremely disadvantaged youth to have short-term and long-term benefits for youth most at-risk, the importance of considering propensity for aggression as a viable program outcome, and support for the notion that it is “never too late” to help youth succeed.

For youth currently enrolled in the YMCA program, compared to youth on a wait list, the program had significant effects on reducing their self-reported aggression while in the program, but only when we controlled for aggressive propensity. Stated otherwise,

although program participants did not differ from wait list controls on "triggers" for aggression measured in the propensity scale, they did appear to be less willing to act on those triggers. Of course, it is not clear whether this reflected learned self-control (i.e., inhibiting aggressive actions) or simply more disciplined behavior in the context of a group setting where aggressive behavior was sanctioned and positive behavior was rewarded. Still, this is an impressive finding given the relatively large body of research demonstrating iatrogenic (harmful) effects on aggressive and delinquent behavior for interventions that group at-risk youth together for extended periods of time (Dodge, Dishion, & Lansford, 2006).

Most notable is the finding for previous graduates compared to community controls. The long-term effects for reducing both propensity to use aggression and aggressive behavior were evident for previous program participants who were now young adults living in the community. Our findings also suggest that the reduction in aggressive behavior for this group was related to lower scores on the propensity for aggression scale. This translates to a higher threshold before youth are willing to use aggression. For Jamaican youth this finding is dramatic. Indeed, within urban ghettos, countless stories abound of hypersensitivity to the most trivial provocations that frequently are interpreted as disrespectful or insulting. This is not hostile bias under conditions of ambiguity, but rather a cognitive distortion that allows youth to interpret almost any action as an affront to their status within the context of an ongoing power struggle for survival. For example, Harriott (2008) describes the case in Jamaica of "man kills brother over dumpling" which emerged from a dispute between two brothers (in a power struggle for status) over the right temperature at which the dough should have been put in the pot.

As we noted earlier in this paper, under conditions of extreme poverty and danger, violence can emerge as a means of self-preservation linked to power, status, resources, and survival (Buss & Shackelford, 1997). However, as the dumpling story above illustrates, through cognitive distortions (where trivial incidents are perceived as threats) it easily can be translated into a willingness to use aggression at extremely low levels of provocation. Thus, reducing individual's propensity or willingness to use aggression may be an important intervention outcome to consider.

Finally, our findings tell an important developmental story. In recent decades, research and associated prevention programming focused on the importance of allocating resources to early child development has proliferated, particularly involving children ages 0-10. Clearly, insights into the architecture of the developing brain and the emergence of more stable cognitive and behavioral habits as children get older suggest that it is important to set children on a healthy course from birth (or before) onward (Shonkoff, in press). However, in some arenas, this has led to fewer resources or support for adolescent interventions. With some exceptions, there also is a relatively scant evidence-base for preventing aggression among at-risk, older youth. This is particularly notable for developing nations where youth grow up under conditions of extreme poverty and family stress, and where risk for aggression permeates the entire ecological system. In many cases, these system-level risk factors (e.g., poverty, inequality, lack of employment) are difficult to change and require long-term solutions. One of the few viable short-term solutions may be to equip youth with the academic, social, and cognitive skills they need to navigate these conditions more effectively. Indeed, 96.9% of the current participants indicated that they thought the program "changed my life for the better."

Our findings suggest that community-based programs that promote positive youth development can help. Given the nuances of developmental contexts both locally and globally, youth serving agencies may be best positioned to understand local needs and how to help youth adapt to their specific circumstances. Although these programs may not emerge from specific theoretical perspectives, in the case of the YMCA, they clearly reflect important components of healthy adjustment that have been linked empirically to youth well-being—promoting self-regulation, pro-social connectedness, a moral system of belief, a positive identity, and good decision-making skills through instruction, modeling, and mentoring (Guerra & Bradshaw, 2008; Kim, Guerra, & Williams, 2008). Even under the most difficult living conditions, the findings from the present study suggest that just as it's never "too early," it's also "never too late."

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Table 1

Logistic Regression Estimating the Effects of Economic and Family Covariates on the Likelihood of Being Program Participants (Scored 1), Compared to Controls (Scored 0), for the YMCA enrolled/Wait-list and YMCA Graduate/Community Control Samples

	YMCA Enrolled/wait-list					YMCA Graduate/community control				
Covariates	b	se	z	*p*	Odds Ratio	b	se	z	*p*	Odds Ratio
Possessions[1]	-.078	.138	-.56.	.57	.925	-.287	.185	-1.55	.12	.750
Plumbing[2]	.172	.345	.50	.62	1.187	1.202	.424	2.83	.01	3.327
Mother[3]	.307	.410	.75	.45	1.359	.405	.433	.93	.35	1.499
Constant	.614	.497	1.24	.22		-.580	.474	-1.22	.22	

[1]Number of more expensive possessions: car, bus, or truck; motorcycle, computer, or cable service

[2]Have sole use of indoor water and toilet facilities (scored 1) compared to outdoor shared facilities

[3]Currently live with mother or grandmother (scored 1) compared to other adult relatives or living on one's own (scored 0)

Table 2

Results of Principal Components Factor Analysis with Oblique Rotation and A Test for Internal Consistency (Alpha Coefficient) for the Male Physical Aggression Scale

In the last month (give date), how many times have you:	Enrolled/Wait list Sample N = 180	Graduate/Community Control Sample N = 116
Shoved or pushed a male?	.700	.747
Threatened to hit or physically harm another male?	.724	.671
Been in a fight in which you hit someone?	.672	.744
Thrown something at someone to hurt them?	.616	.575
Hit or slapped someone?	.794	.720
Eigenvalue	2.475	2.409
Alpha Coefficient	.743	.723

Table 3

Results of Principal Components Factor Analysis with Oblique Rotation and A Test for Internal Consistency (Alpha Coefficient) for "What would make you fight" Scale

Would you hit or fight with a male if:	Enrolled/Wait List Sample N = 180	Graduate/Community Control Sample N = 116
He hit you first?	.645	.676
He shouted at you or called you names?	.627	.737
He spread rumors and lies about you behind your back?	.718	.699
He took something of yours without asking you?	.545	.646
You were angry or in a bad mood?	.607	.565
You wanted to get revenge?	.691	.664
He said something bad about a member of your family?	.655	.708
Eigenvalue	2.897	3.167
Alpha Coefficient	.76	.79

Table 4

Distribution of Youth Across the Program Exposure Categories for the YMCA Enrolled (N = 180) and Graduate Samples (N = 116)

	Enrolled/Wait List Sample			Graduate/Community Control Sample		
Program Exposure Categories[1]	Cut Scores[2]	N	%	Cut Scores[3]	N	%
0	none	55	30.1	none	60	50.0
1	2008-09	58	31.7	5-21	22	18.3
2	2007	34	19.1	22-33	21	18.3
3	2000-06	33	19.1	45-81	13	13.3

[1]Category "0" represents the comparison group having no program exposure

[2]Cut scores for the enrolled sample are based on start dates since most have not yet finished the program

[3]Cut scores for the graduate sample are based on start and finish dates and are expressed in months of program exposure

Table 5

OLS Regression Estimates of the Effects of Program Exposure on the "What would make you fight" Scale for the Enrolled/Wait List and Graduate/Community Control Samples

Enrolled	B	Se	t-value	*p*	Beta
Program Exposure	.074	.045	1.644	.097	.124
Intercept	2.040				
R^2	.015				
Graduate					
Program Exposure	-.183	.048	-3.81	.000	-.326
Plumbing Facilities	-.293	.103	-2.85	.006	-.243
Intercept	2.345	.085	27.65	.000	
R^2	.190				

Table 6

OLS Regression Estimates of the Effects of Program Exposure on Self-Reported Aggression for the Enrolled/Wait List and Graduate/Community Control Samples

Enrolled	B	se	t-value	*P*	Beta
Program Exposure	-.065	.047	1.383	.172	-.102
Intercept	1.942				
R^2	.011				
Graduate					
Program Exposure	-.129	.047	-2.745	.006	-.246
Plumbing Facilities	-.265	.100	-2.650	.009	-.234
Intercept	1.906	.082	23.244	.000	
R^2	.133				

Table 7

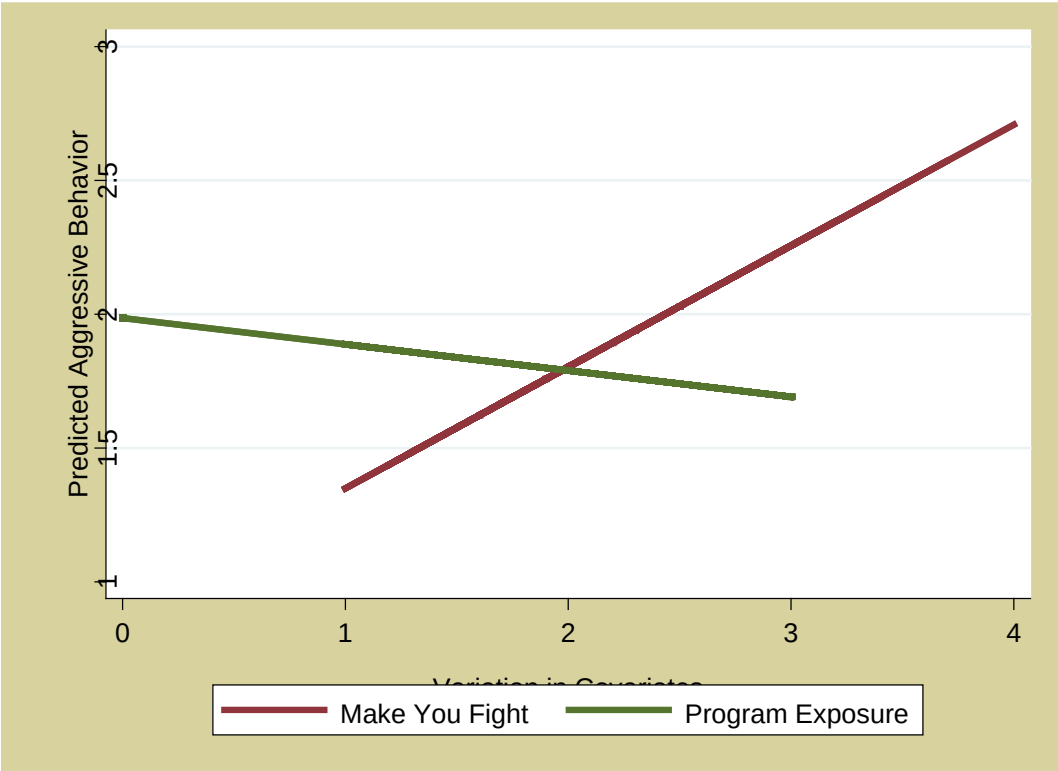
OLS Regression Estimates of the Effects of Program Exposure the "What would make you fight" Scale on Self-Reported Aggression for the Enrolled/Wait List and Graduate/ Community Control Samples

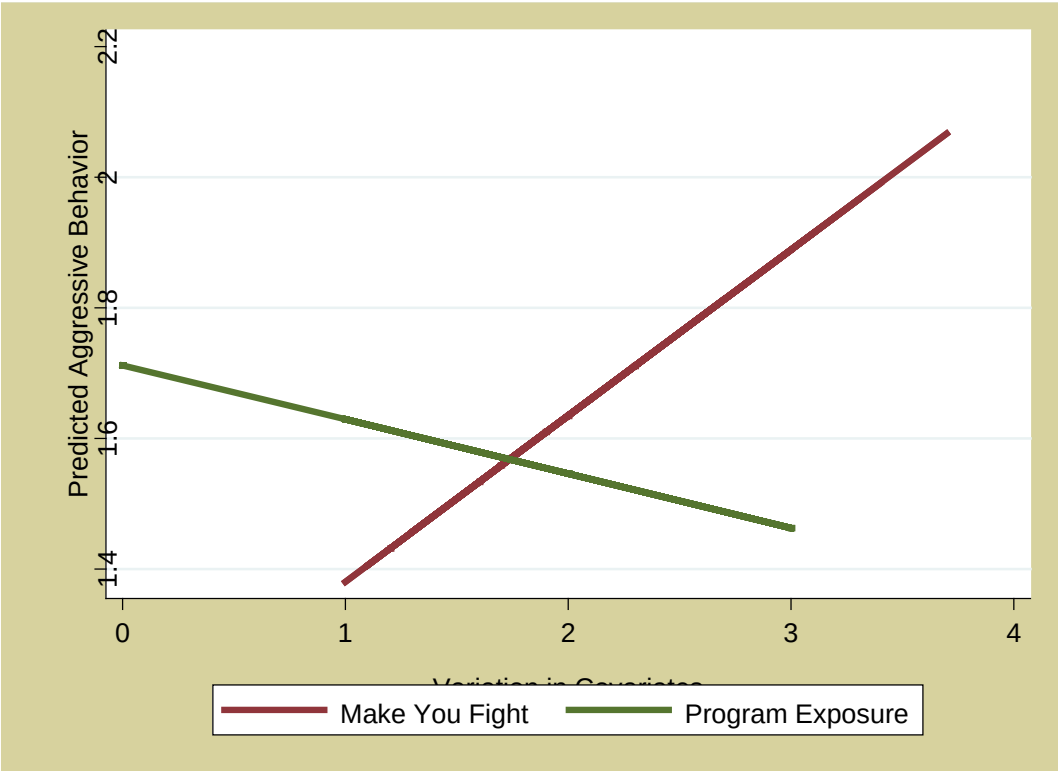
Enrolled	b	se	t-value	*P*	Beta
Program Exposure	-.098	.043	2.279	.023	-.156
Make You Fight	.453	.072	6.292	.000	.430
Intercept	1.019				
R^2	.193				
Graduate					
Program Exposure	-.083	.048	-1.729	.086	-.158
Make You Fight	.254	.088	2.886	.005	.271
Plumbing Facilities	-.191	.101	-1.891	.060	-.169
Intercept	1.311	.222	5.905	.000	
R^2	.193				

Figure Captions

Figure 1. Empirical Relations between the What Would Make You Fight Scale, Program Exposure, and Predicted Aggressive Behavior for the Enrolled Sample.

Figure 2. Empirical Relations between the What Would Make You Fight Scale, Program Exposure and Predicted Aggressive Behavior for the Graduate Sample.


Predicted Aggressive Behavior
1
1.5
2
2.5
3
0
1
2
3
4
Make You Fight
Program Exposure


Predicted Aggressive Behavior
1.4
1.6
1.8
2
2.2
0
1
2
3
4
Make You Fight
Program Exposure